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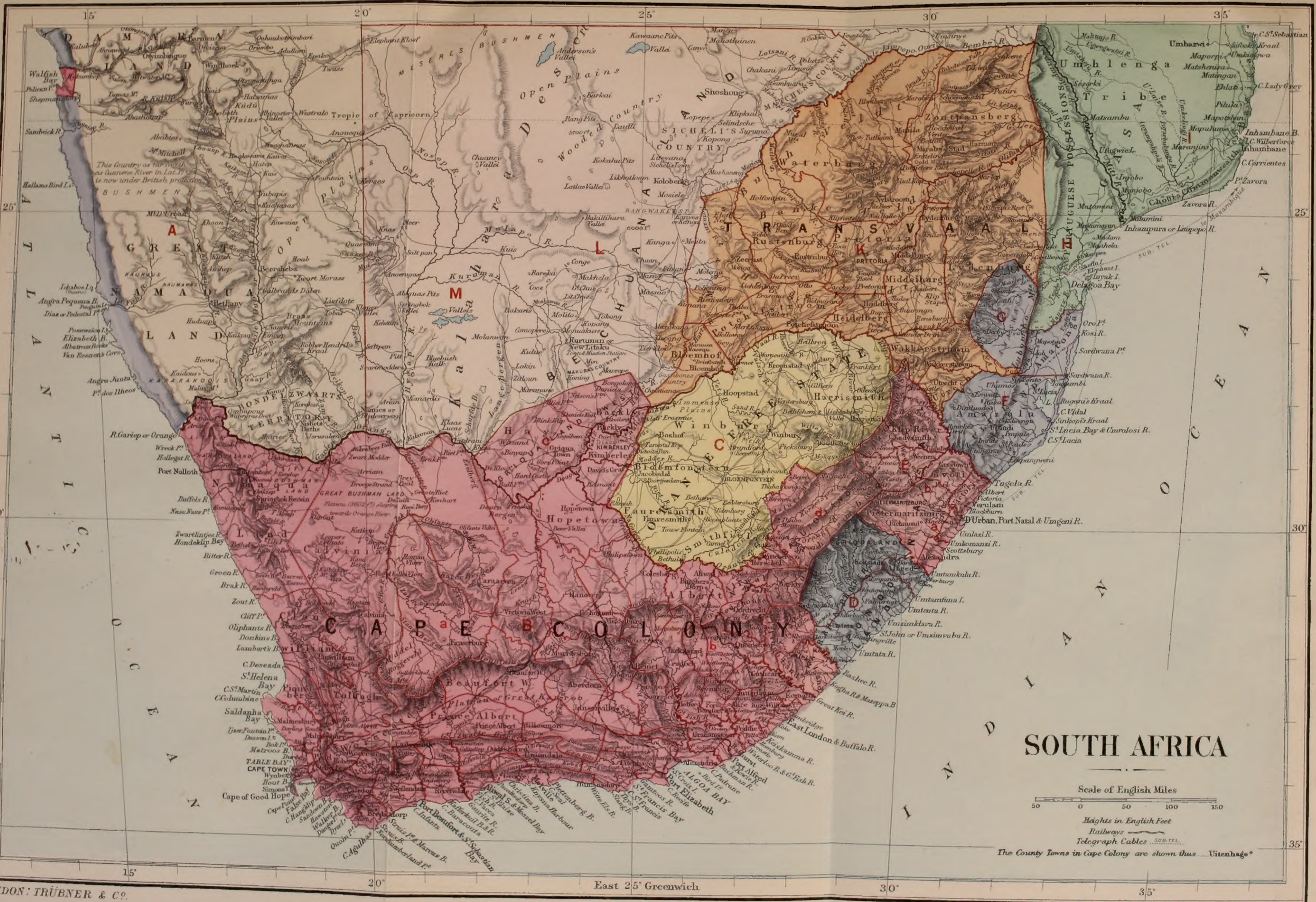
SOUTH-AFRICAN BUTTERFLIES.



DAMARA LAND
GREAT NAMAQUA LAND
BUSHMEN
Walfish Bay
Windhoek
Rehoboth
Bethany
Tropic of Capricorn
KALAHARI DESERT
Open Plains
Wooded Country
BECHUANALAND
SICHELI'S COUNTRY
Shoshong
TRANSVAAL
Pretoria
Rustenburg
Middelburg
Heidelberg
Potchefstroom
Waterberg
Zoutpansberg
Lydenburg
Wakkerstroom
ORANGE FREE STATE
Bloemfontein
Kroonstad
Harrismith
Winburg
Boshof
Fauresmith
Smithfield
Kimberley
Griqua Town
CAPE COLONY
Cape Town
TABLE BAY
Cape of Good Hope
C. Agulhas
Beaufort W.
Port Elizabeth
ALGOA BAY
Grahamstown
East London & Buffalo R.
Colesberg
Aliwal N.
NATAL
Pietermaritzburg
D'Urban, Port Natal & Umgeni R.
Tugela R.
AMAZULU
Ulundi
St. Lucia Bay & Umvolosi R.
Delagoa Bay
PORTUGUESE POSSESSIONS
Umhlenga Tribe
Inhambane
C. Corrientes
Limpopo R.
EAST GRIQUALAND
PONDOLAND
Umtata R.
Great Kei R.
Port Nolloth
Orange R.
ATLANTIC OCEAN
INDIAN OCEAN
A
B
C
D
E
F
G
H
I
K
L
M
a
b
c
d
15°
20°
25°
30°
35°
East 25° Greenwich

SOUTH AFRICA

Scale of English Miles

50 0 50 100 150

Heights in English Feet

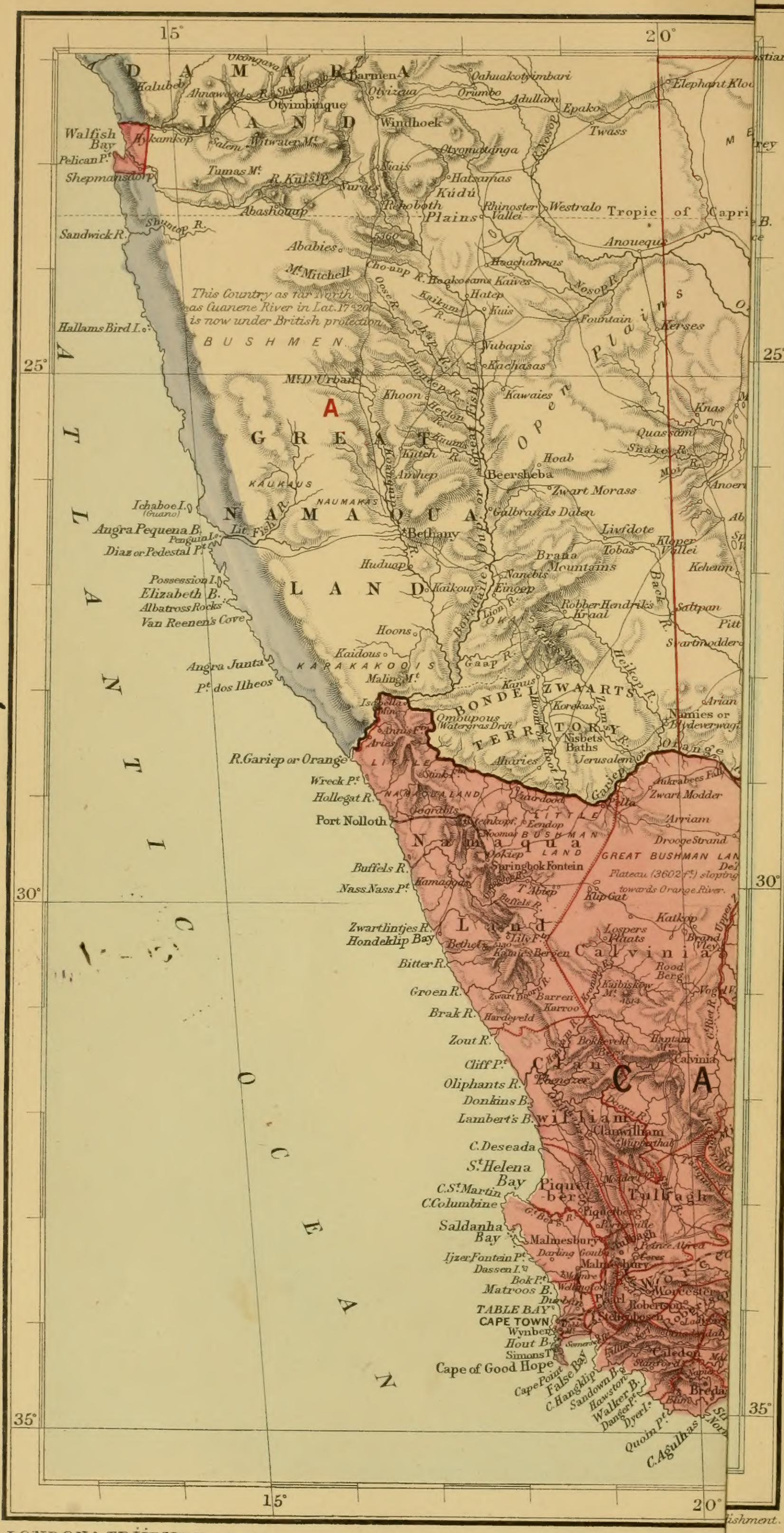
Railways

Telegraph Cables SUB. TEL.

The County Towns in Cape Colony are shown thus Uitenhage°

LONDON: TRÜBNER & Co.

Stanford's Geographical Establishment.


15°
20°
25°
30°
35°
DAMARA LAND
Kalubeb
Ahnawood
Barmen
Otyimbingue
Otyizaua
Oahuakotyimbari
Orumbo
Adullam
Epako
Elephant Kloo
Windhoek
Twass
Walfish Bay
Rykamkop
Pelican Pt.
Shepmansdorp
Salem
Witwater Mt.
Tumas Mt.
R. Kuisip
Otyomudunga
Haisamas
Kúdú
Rehoboth Plains
Rhinoster Vallei
Westralo
Tropic of Capri
Anouequs
Abashoaup
Sandwich R.
Shuntop R.
Ababies
Mt. Mitchell
Choaup R.
Hoachamas
Hakosams Kaives
Nosop R.
Hatep
Kuis
Fountain
Kerses
This Country as far North as Cuanene River in Lat. 17° 20' is now under British protection.
BUSHMEN
Hallams Bird I.
Kubapis
Kachasas
Plains
Mt. D'Urban
Ehoon
Kawaies
A
GREAT NAMAQUA LAND
Knas
Quas Sam
Snake R.
Hoab
Beersheba
Zwart Morass
KAUKAUS
NAUMAKAS
Ichaboe I. (Guano)
Angra Pequena B.
Penguin Is.
Diaz or Pedestal Pt.
Lit. Fish R.
Bethany
Galbrands Dalen
Liefdote
Kloper Vallei
Tobas
Brana Mountains
Huduap
Nanebis
Eingep
Kaikoup
Possession I.
Elizabeth B.
Albatross Rocks
Van Reenen's Cove
Robber Hendrik's Kraal
Saltpan
Hoons
Kaidous
KARAKAKOOIS
Maling Mt.
Angra Junta
Pt. dos Ilheos
Gaap R.
Kanus
BONDELZWAARTS TERRITORY
Korekas
Nisbets Baths
Ombupous
Watergras Drift
Aharies
Jerusalem
Namies or Bidjeverwagt
Arian
Isabella Mine
Aries
R. Gariep or Orange
Wreck Pt.
Hollegat R.
LITTLE NAMAQUALAND
Stinkfn.
Zwart Modder
Aukrabees Fall
Port Nolloth
Ookiep
Springbok Fontein
LITTLE BUSHMAN LAND
Arriam
Droogestrand
GREAT BUSHMAN LAND
Plateau (3602 ft.) sloping towards Orange River.
Buffels R.
Nass Nass Pt.
Kamaggas
Kup Gat
Namaqua Land
Zwartlintjes R.
Hondeklip Bay
Lily Fn.
Bethel
Kamies Bergen
Lospers Plaats
Katkop
Calvinia
Rood Berg
Bitter R.
Groen R.
Brak R.
Zout R.
Zwart Doorn R.
Barren Karroo
Hardeveld
Kaibiskow Mt.
Hantam Mt.
Calvinia
Cliff Pt.
Oliphants R.
Donkins B.
Lambert's B.
Clanwilliam
Wupperthal
C A
C. Deseada
St. Helena Bay
C. St. Martin
C. Columbine
Saldanha Bay
Piquetberg
Tulbagh
Malmesbury
Ijzer Fontein Pt.
Dassen I.
Bok Pt.
Matroos B.
Darling
Worcester
TABLE BAY
CAPE TOWN
Wynberg
Hout B.
Simons T.
Stellenbosch
Paarl
Robertson
Caledon
Cape of Good Hope
Cape Point
False Bay
C. Hangklip
Sandown B.
Hawston
Walker B.
Danger Pt.
Dyer I.
Quoin Pt.
C. Agulhas
Bredasdorp
ATLANTIC OCEAN
A

LONDON: TRÜBNER & Co.

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ENT.

SOUTH-AFRICAN BUTTERFLIES:

A MONOGRAPH

OF THE

EXTRA-TROPICAL SPECIES.

BY

ROLAND TRIMEN, F.R.S., F.L.S., F.Z.S., F. ENT. S., &c.
CURATOR OF THE SOUTH-AFRICAN MUSEUM, CAPE TOWN;

ASSISTED BY

JAMES HENRY BOWKER, F.Z.S., F.R.G.S.
COLONEL (RETIRED) IN THE CAPE SERVICE,
LATE COMMANDANT OF FRONTIER ARMED AND MOUNTED POLICE,
GOVERNOR'S AGENT IN BASUTOLAND,
AND CHIEF COMMISSIONER AT THE DIAMOND FIELDS OF GRIQUALAND WEST.

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SMITHSONIAN INSTITUTION.

VOL. I.

NYMPHALIDÆ.

LONDON:
TRÜBNER & CO., LUDGATE HILL.
1887.
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EDINBURGH AND LONDON

PREFACE.

THE book entitled "*Rhopalocera Africæ Australis; a Catalogue of South-African Butterflies*," which I published in 1862–66, has for long been out of print as well as out of date. Incomplete as it necessarily was, I am glad to know that it has proved very serviceable, especially in South Africa; and this has encouraged me to prepare the present work on the same subject, embodying as far as I am able the results of the wider knowledge gained during the twenty-one years which have passed since the old book made its appearance. As the new work is much more than a second edition of the former one, I have given it a different title, concisely descriptive of its character and scope.

Unable to finish the work as soon as I had anticipated, I think it well to publish the completed portion without more delay. The two parts now together issued contain the Families *Nymphalidæ*, *Erycinidæ*, and *Lycænidæ*, comprising 238 species,—a little over three-fifths of the whole number known. The concluding part, dealing with the Families *Papilionidæ* and *Hesperidæ*, will describe about 142 species, bringing the total of known South-African forms up to about 380,—a striking increase over the record in 1866, when (after removing the erroneous admissions from the list) only 197 natives of South Africa were registered.

Keeping in view the requirements of students and collectors in the Cape Colony, Natal, and elsewhere in South Africa, who are for the most part debarred from opportunities of consulting properly classified collections or accepted works of reference, I have prefixed an Introduction, which comprises a brief notice of the structure of insects generally, and a fuller account of the Order *Lepidoptera.* After the technical diagnosis of the Sub-Order *Rhopalocera,* which follows, I give at some length a series of general observations on butterflies, under the heads of; 1. Distinctive Characters of Rhopalocera; 2. Classification; 3. Geographical Distribution; 4. Differences Presented by the Sexes; 5. Haunts and Habits; 6. Protective Resemblances and Mimicry; and 7. South-African Butterflies. In Plate A., exhibiting the neuration of the wings and some other structural features of chief value in classification, I have selected for illustration a common and characteristic species of each Family and Sub-Family inhabiting South Africa, and in the explanation accompanying the plate I have entered into full details.

In the generalities just referred to, as well as in the subsequent ones following the diagnosis of the various Families, Sub-Families, and Genera, care has been taken not to confine them to South-African, or even to Ethiopian forms, but to include, wherever serviceable, reference to allied groups or species in other parts of the world.

In dealing with the species, the progress of observation has made it practicable to give, either from my own or (more frequently) others' notes, many more interesting details of the larvæ, pupæ, and habits generally than were contained in my former work. In revising the synonymy, I have endeavoured (following the example long ago set by the illustrious Darwin) to weed it of "references to works in which there is not any original matter, or in which the plates are not of a high order of excellence;"[1] and in all cases where the authority was accessible to me, I have personally verified every reference given either to a description or to a figure. In instances where this has not been practicable, inverted commas denote that the quotation is not my own. Special care has been taken to ascertain and state systematically the recorded geographical range of every species, and the known localities have accordingly been arranged uniformly throughout in the following order, viz. :—

---

[1] *Monogr. on the Sub-Class Cirripedia,* i. p. x. (1851).

- I. SOUTH AFRICA.
  - A. Great Namaqualand.
  - B. Cape Colony (*a.* Western Districts, *b.* Eastern Districts, *c.* Griqualand West, *d.* Basutoland).
  - C. Orange Free State.
  - D. Kaffraria Proper.[1]
  - E. Natal (*a.* Coast Districts, *b.* Upper Districts).
  - F. Zululand.
  - G. Swaziland.
  - H. Delagoa Bay.
  - I. Inhambane.
  - K. Transvaal.
  - L. Bechuanaland.
  - M. Kalahari.
- II. OTHER AFRICAN REGIONS.
  - A. South Tropical (*a.* Western Coast, *aa.* Islands, *a*I. Western Interior).
  - B. North Tropical (subdivided as in South Tropical).
  - C. Extra-Tropical North Africa.
- III. EUROPE.
- IV. ASIA.
- V. AUSTRALIA.
- VI. AMERICA.

In this arrangement South Africa is, of course, treated more in detail than other regions, and in the map issued with this work the several territories south of the Tropic are denoted by red letters corresponding to those above given. As regards the list of recorded localities of each species, it should be noted that (1) when I have personally captured the species, the name of the place is given alone; (2) when I have received specimens of the species and determined them, the name of the collector (in italics and bracketed) immediately follows that of the place; and (3) when place and collector are quoted from other authors, they are placed between inverted commas, and the name of the author responsible is added.

---

[1] When this arrangement was planned, Kaffraria Proper or Independent Kaffirland occupied all the territory between the Cape Colony and Natal, or, in other words, between the Kei and Umzimkulu. Politically the whole of this territory, except the central coast tract of Pondoland and the small north-east tract named "Alfred" annexed to Natal, now forms part of the Cape Colony. The several subdivisions of the territory are named Tembuland Proper, Emigrant Tembuland, Fingoland, Gcalekaland, and Griqualand East.

The coloured plates are wholly new, none of the species represented in the former work being re-figured. Plates I. and II. are devoted to larvæ and pupæ, taken from life by myself in a few instances, but mostly drawn by other observers. Plates III. to IX. depict perfect insects of the Families treated in Parts I. and II. of the work, exhibiting both upper and under surfaces of the wings. Three other plates have been executed in illustration of Part III. While the figures are for the most part those of new or previously unfigured species, a fair proportion consists of more accurate representations of butterflies hitherto inadequately depicted, or of which only one sex had been illustrated. They have been chromo-lithographed from nature by Messrs. West, Newman, & Co., of Hatton Garden, London.

Although for many years fortunately situated as regards the prosecution of this work by my tenure of the Curatorship of the South-African Museum, I have, on the other hand, had to sustain the serious disadvantage of being tied by official duties to a locality lamentably barren of butterfly life. Cape Town and its neighbourhood is absolutely not more productive of species than Brighton, and, as regards size (with three exceptions) and abundance of individuals, the butterflies of the South-African metropolis compare very badly with the series yielded by the principal town of Sussex. Beyond a stay for nine months in the Knysna district, and occasional more or less hurried excursions to Namaqualand, Griqualand West, Grahamstown, and

Natal, my opportunities for personally collecting and observing have only extended to the unproductive Western Districts within 150 miles of Cape Town. This unfavourable limitation of my own field-work has, however, been very largely counterbalanced by the abundant material which has always been placed at my disposal by the activity and liberality of my numerous correspondents in different parts of South Africa.

At the head of these generous helpers in my work stands my friend Colonel James Henry Bowker, to whose energy and observant powers as a naturalist I owe the greater part of my acquaintance with the rarer Lepidoptera of the country. As long ago as 1866 I had the pleasure of recording how largely he had contributed to my former work; and my indebtedness to his generous aid has, I am happy to say, steadily increased ever since.

Colonel Bowker's *début* as a votary of entomology took place in Kaffraria twenty-seven years ago, and the great success which attended his researches in that productive region was only the prelude to his fruitful labours in Basutoland, Griqualand West, Natal, and Zululand. The fine collection of native butterflies in the South-African Museum owes the greater part of its treasures to his exertions,—no less than forty new species, and one most remarkable new genus (*Deloneura*), in addition to very many rarities, being his own discoveries and donations. The gift of specimens has been immeasurably enhanced in value by his copious notes on the haunts and habits of the insects, their distribution in South Africa, and their earlier stages. It is in very inadequate but most grateful acknowledgment of his co-operation that I have, with his permission, associated his name with my own on the title-page of the work to which he has so extensively and ably contributed.

To Mrs. F. W. Barber, the sister of Colonel Bowker, I am also greatly indebted. Long known to European botanists for her attainments and discoveries in regard to the Flora of the

Cape, this lady had a wide acquaintance with South-African Natural History generally, and in 1863 turned her attention specially to the Lepidoptera. With characteristic generosity—knowing that I was engaged in bringing out a book on the subject—Mrs. Barber offered me the fullest aid, and constantly since then have her net, pen, and artistic pencil been actively engaged in furtherance of my work. Of special value have proved her graphic accounts of the habits and stations of the butterflies of the Eastern Districts of the Cape Colony, where she has chiefly resided, and her excellent coloured drawings of larvæ and pupæ, some of which are reproduced in Plates I. and II. of this volume. My friend's strong love of nature and keen observant powers are happily shared by her daughter, Mrs. Bailie, and her two sons, Mr. Frederick and Mr. Henry Barber; and many of the most interesting captures and discoveries recorded by Mrs. Barber are due to their enthusiastic co-operation as collectors and observers. Mr. F. and Mr. H. Barber have also independently rendered me much service by sending down several collections made in the Transvaal and the country northward to the Zambesi.

The principal material at my disposal has been as follows in respect of the various South-African territories named; and I must ask the donors who may see these pages to excuse the brevity with which their valued contributions of specimens and notes (and in some cases drawings also) are of necessity here gratefully acknowledged:—

GREAT NAMAQUALAND.—A small series from Mr. W. C. Palgrave.

CAPE COLONY (*Western Districts*).—Collections from the neighbourhood of Cape Town, besides those made by myself for many years:—Mr. C. A. Fairbridge, Senior Trustee of the South-African Museum; Mr. E. L. Layard, formerly Curator of the Museum; the late Mr. H. W. Oakley, Assistant to the Curator.

From Knysna District, besides my own collection made there in 1858–59: a fine collection formed by Miss Wentworth, now Mrs. J. J. Muskett; and a smaller series from the late Mr. W. H. Newdigate.

From Caledon, Swellendam, Montagu, and Robertson: small collections made respectively by the Rev. G. Hettarsch, the late Mr. L. Taats, Dr. D. R. Kannemeyer, and myself.

From Carnarvon District: several small separate series from Mr. E. G. Alston.

From Namaqualand District, in addition to some species taken by myself in 1873: a very interesting collection made in 1885 by Mr. L. Péringuey, Assistant Curator of the Museum.

(*Eastern Districts*).—From Albany and Bathurst Districts and parts of adjacent Districts, besides Mrs. Barber's extensive collections and one formed by myself in 1870: various contributions by Miss M. L. Bowker, Mr. H. J. Atherstone, Dr. H. Becker, Mr. W. F. Billinghurst, Mr. John L. Fry, and Mr. F. Schiffman.

From Port Elizabeth and Uitenhage Districts, besides a small series of my own taking: collections by Colonel J. H. Bowker and Mr. S. D. Bairstow.

From King William's Town and East London Districts: many specimens and drawings, with excellent notes, from Mr. J. P. Mansel Weale; various living pupæ, as well as other specimens, from Miss F. Bowker; numerous examples, with valuable accounts of seasons and haunts, from Mr. W. S. M. D'Urban; a small collection made at East London by Mr. P. Borcherds; and various species from the Venerable Archdeacon Kitton. Colonel Bowker also from time to time forwarded a considerable number of butterflies from these districts.

Albert District: a small but most interesting series collected by Dr. D. R. Kannemeyer, illustrated by notes of much value on stations and habits.

Basutoland.—From this territory the only material received was the collection formed by Colonel Bowker between March 1868 and June 1870; it consisted of sixty-two species.

Griqualand West.—Mrs. Barber and Colonel Bowker forwarded considerable series, chiefly from the banks of the Vaal River; smaller sets from time to time contributed by Mr. John B. Currey, Mr. John L. Fry, Mr. H. L. Feltham (with notes of much interest), and the late Mr. S. Stonestreet.

KAFFRARIA PROPER.—A very fine and complete collection gathered by Colonel Bowker in the country between the Great Kei and Bashee Rivers during the years 1860–66.

NATAL.—In addition to my own captures in 1867, very extensive series (with copious notes, larvæ, pupæ, &c.), secured by Colonel Bowker from 1878 to the present time; many specimens (with excellent drawings of early stages and useful observations and descriptions) from Mr. W. D. Gooch; a few specimens, but many most interesting sketches and descriptions of larvæ and pupæ, from Captain H. C. Harford; many admirably preserved examples from the Upper Districts, collected by Mr. J. M. Hutchinson; a large collection formed at D'Urban by the late Mr. M. J. M'Ken; several new and rare forms from Mr. W. Morant; and a small series (with drawings of larvæ and pupæ) forwarded by the late Dr. J. E. Seaman.

ZULULAND.—A small collection made at St. Lucia Bay by the late Colonel H. Tower in 1867, and numerous specimens captured by Colonel Bowker in 1880.

SWAZILAND.—A few examples (with notes of localities and coloured photographs of many species taken) from the late Mr. E. C. Buxton.

DELAGOA BAY.—An interesting series (accompanied by some good sketches and notes) from Mrs. Monteiro.

TRANSVAAL.—A fine collection, in the best order, formed by Mr. T. Ayres, and acquired by the Trustees of the South-African Museum in 1879; a small series collected by Mr. F.

and Mr. H. Barber; a large number from Mr. A. W. Eriksson; and a considerable collection made by Mr. F. C. Selous.

The four gentlemen last named have all contributed in addition many butterflies from the Tropical Interior extending to the Zambesi Valley; and for many specimens from Damaraland I am indebted to the late Mr. C. J. Andersson, Mr. J. A. Bell, Mr. J. J. Christie, and Mr. W. C. Palgrave.

To the kindness of Mr. P. MacOwan, Director of the Botanic Gardens in Cape Town, I am indebted for the identification of many food-plants of the larvæ of South-African butterflies.

The assistance rendered me by entomologists in Europe has been invaluable, and my only regret is that my visits to England have been too few and brief for more fully availing myself of the liberality with which access to their collections was awarded me. The treasures of the magnificent National Collection in the British Museum have always been open to me through the courtesy of the officers of the Zoological Department, and I cannot sufficiently thank my friends Mr. A. G. Butler and Mr. W. F. Kirby for the cordial manner in which, for many years past, they have in every way furthered my researches. The limits of a preface preclude a full mention of the many friends who have lightened my labours, but I give myself the pleasure of specially thanking Mr. H. W. Bates, Mr. W. L. Distant, Mr. F. Du Cane Godman, Professor R. Meldola, Mr. F. Moore, Mr. O. Salvin, Mr. H. Grose Smith, Mr. A. R. Wallace, and Professor Westwood.

Among Continental entomologists, I must express my special obligations to Mr. P. O. C. Aurivillius, of the Royal Museum in Stockholm, who not only sent for my examination typical specimens from Wahlberg's South-African collections described by Wallengren, but also procured for me some admirable figures of a few unique types in the same collections, besides presenting me with his own valuable publications treating of African butterflies. I had previously received from my kind correspondent, Pastor H. D. J. Wallengren of Farhult, a series of his papers on the above-named and other collections, and found them of the greatest assistance.

I am glad to acknowledge, in conclusion, the liberal contribution to the cost of publishing this work which has been made by the Trustees of the South-African Museum, who, regarding it rightly as constituting a full and permanent record of the South-African butterflies in the Museum Collection, have subscribed for copies to the value of £100.

ROLAND TRIMEN.

Museum Residence, Cape Town,
16*th February* 1887.

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INTRODUCTION.

I.—THE CLASS INSECTA.

As the *Lepidoptera* (Butterflies and Moths) are an Order of the Class INSECTA or true Insects, a few words are requisite to indicate the structure of these animals.

The entire class is associated with three others, viz., the ARACHNIDA (Spiders, Scorpions, &c.), the MYRIOPODA (Centipedes, Millipedes, &c.), and the CRUSTACEA (Crabs, Lobsters, &c.), to form the great sub-kingdom ARTHROPODA. This immense assemblage is characterised by the body consisting of a series of rings or segments (*somites*) bearing hollow jointed limbs; and by the integument being so hardened and solidified by the peculiar deposit *chitine*, as to constitute a more or less rigid external skeleton to which the muscles are attached. The rings or segments of the body succeeding those which unite to form the *head* do not, as in the higher members of the sub-kingdom Vermes, present a repetition of the same structure throughout their series, but tend with more or less distinctness to form two separate groups or regions to which special organs and functions are allotted. These two unequal sets or groups of segments are respectively termed *thorax* (the anterior) and *abdomen* (the posterior); and, speaking generally, the organs and functions of locomotion may be said to reside in the former, and those of nutrition and reproduction in the latter.

The CRUSTACEA are separated from the rest of the Arthropoda by a respiratory system working by gills (*branchiæ*), adapted to their aquatic life; while all Insects, Myriopods, and Arachnids are alike in direct aërial respiration by breathing-tubes (*tracheæ*) traversing the body and opening on its exterior by *stigmata*,—or (in the case of certain Arachnids only) by pulmonary sacs. Associated with this important distinction there are others of much note in external structure. Thus, the Crustacea have two pairs of *antennæ*,—other Arthropods but one pair; in the former there is a second pair of inferior jaws (*maxillæ*) functionally active,—but these in the other classes are united to form the under-lip (*labium*); the abdominal limbs of Crustaceans have no representatives in adult Insects or Spiders (though homologous appendages exist in the Myriopoda); nor are the prevalent stalked or pedunculated eyes of Crustaceans to be found in the other classes, except in a very few instances—and in these the stalked eyes are immovable.

The nervous system of the Arthropoda is situated inferiorly, consisting of a double nerve-cord presenting a pair of swellings or nerve-centres (*ganglia*) at intervals, the total number of which normally corresponds to that of the segments, but varies in proportion as the more or less intimate union of the segments in groups accompanies the coalescence of certain ganglia. From the ganglia proceed nerves extending to the various organs; and, between the two pairs (superior and inferior) of the head which constitute the "brain," passes the gullet (*œsophagus*). The upper ("*cerebral*") of these two pairs supplies the nerves of the antennæ and eyes, and the lower ("*cerebellar*") those of the organs of the mouth. The three pairs of the thorax emit nerves to the muscles of that region, and to the legs and wings (if any) attached to it; in some of the higher *Insecta* these thoracic ganglia are combined to form a single nerve-centre, while in others the middle and hind ganglia only are united, leaving the front pair apart. In addition to this main system there is a second visceral one, also ganglionated, which originates in the cerebral ganglia, and is distributed to the gullet and stomach.

These latter organs, with the rest of the alimentary canal and its accessory glands, lie centrally along the body, above the main nervous system, but beneath the circulatory or blood-vascular system; which latter consists of a long-chambered dorsal vessel or "heart," situated along the middle line of the abdomen, and terminating anteriorly in a thoracic *aorta*.

The reproductive system is elaborately developed, and the sexes are separate—except in the cases of certain low Arachnids (*Tardigrada*), and of the probably degenerated Crustaceans known as Barnacles (*Cirripedia*). The Arthropoda are with but few exceptions oviparous, but some produce the larvæ already hatched.

Among the three classes of air-breathing or *tracheated* Arthropoda, the INSECTA are, as their name implies, specially distinguishable by the very marked division of the body into the three separate portions of head, thorax, and abdomen. In the Arachnida the head and thorax coalesce into one mass (*cephalo-thorax*), while in the Myriopoda the thoracic and abdominal segments exhibit no distinctly separate grouping. Insects and Arachnids agree in never having any jointed limbs attached to the abdominal segments; but the former never have more than six (three pairs) ambulatory or walking limbs, while the latter have eight; and insects alone in the sub-kingdom are provided with wings. These organs are not true limbs like the hollow jointed legs, but merely expansions of the integument, springing from the sides of the middle and hind segments of the thorax; they are traversed, and at the same time extended and supported by hollow, horny, stiff, rib-like tubes, known either as veins or nervures. The possession of six thoracic legs only, and of four thoracic wings, are the unmistakable marks of Insects properly so called. The number and position of the legs are quite constant; but the lowest groups (*Collembola*, or "Spring-tails," and *Thysanura*, or "Fish-insects") have no wings, the *Diptera* (House-flies, Gnats, &c.) have the hind pair of wings undeveloped, and in all the winged Orders cases of wingless forms occur.

Closely associated with the possession of wings—which is the exclusive privilege of the adult insect—is the more or less complete *metamorphosis*, or series of changes from one stage or state of development to another, undergone in the course of progress from the egg to the *Imago*, or perfect Insect. This is very striking in those Orders (*Lepidoptera, Diptera, Hymenoptera, Neuroptera*, and *Coleoptera*) in which the *larva* is cylindrical and worm-like, and the *pupa*, or chrysalis, perfectly quiescent and helpless; while in the others (*Hemiptera* and *Orthoptera*) the close resemblance of the larva when hatched to the adult, with the result that there is no true *pupal* state, but unbroken activity throughout life, renders the acquisition of wings a matter of more gradual and apparent development, as the successive casts of skin or moultings are gone through.

While the Orders of Insects were named by Linnæus, and are still for the most part conveniently grouped, in accordance with characters peculiar to the wings, a more trustworthy basis for their classification, as far as external structure is concerned, is found in the parts of the mouth. When these are carefully studied, they are found in the several Orders to be fairly constant modifications of the typical insect-mouth, which consists of (1°) a single horny upper lip (*labrum*) articulated to the fore-part (*clypeus*) of the head; (2°) a pair of principal seizing or biting jaws (*mandibles*); (3°) a pair of accessory masticatory jaws (*maxillæ*); and (4°) an under lip (*labium*), which is formed by the more or less complete coalescence of a second pair of maxillæ. This typical form of mouth, so well adapted for seizing, holding, and tearing up food, is most fully shown in the Orthoptera (Grasshoppers, Praying-insects, Leaf-insects, Dragon-flies, &c.), and Coleoptera (Beetles). In the Neuroptera (Ant-lions, Lace-wing flies, Caddice-flies, &c.), while the masticatory type prevails, there exist certain groups in which there is modification towards a suctorial type (*Panorpidæ*), or considerable atrophy of the mouth-organs generally (*Phryganeidæ*). In the Hymenoptera (Ants, Bees, Wasps, Ichneumon-flies, &c.), there is a series of gradations from the masticatory to a combined masticatory and suctorial mouth. Lastly, the Orders Hemiptera (Bugs, Cicadas, Aphides, &c.), Diptera (House-flies, Gad-flies, Gnats, &c.), and Lepidoptera (Butterflies and Moths) are exclusively suctorial, the mouth-organs being profoundly modified to form a channel for liquid food. As compared with the other two suctorial Orders, in which all the typical mouth-parts are well expressed, though altered in order to the formation of the beak-like proboscis (*rostrum*), the Lepidoptera exhibit a remarkable suppression or abortion of all the organs except the maxillæ, which are greatly lengthened and so shaped as together to form a tubular "trunk" (*haustellum*), capable of being rolled up spirally when not in use.

II.—THE ORDER LEPIDOPTERA.

From what has been stated above, it will be apparent that the Butterflies and Moths belong to the higher or more specialised Insects, distinguished by a more concentrated nervous system, and accompanying compactness and very distinct partition of the three regions of the body, as well as by the complete metamorphosis they undergo. From the latter character, the five Orders Hymenoptera, Lepidoptera, Diptera, Neuroptera, and Coleoptera, constitute a Sub-Class named *Metabola*. The following may be regarded as the distinguishing features of the LEPIDOPTERA, viz.:—

(*a.*) *Imago* (or Perfect Insect).

Body and limbs clothed with scales and hairs.

Head with the labrum, mandibles, and (except in some of the lower Moths) maxillary palpi, rudimentary; but with the maxillæ elongated and modified into a tubular haustellum; labium much reduced, but the labial palpi moderately developed and laterally compressed, forming a protection to the haustellum when coiled up. The lateral compound eyes large and prominent; two simple eyes (*stemmata*) on the vertex in some groups. Antennæ many-jointed, very variable in shape and structure, inserted on upper part of head, between compound eyes.

Thorax very compact and robust; its first segment (*prothorax*) very small, bearing the first pair of legs; its second segment (*mesothorax*), bearing the first pair of wings and second pair of legs, much enlarged, and constituting the mass of its bulk; its third segment (*metathorax*) small, bearing the third pair of legs and second pair of wings. Prothorax also bearing dorsally a pair of small, horny, scale-like organs (*patagia*); mesothorax bearing laterally, immediately above the bases of the fore-wings, a pair of similar appendages (*tegulæ* or *pterygodes*). Wings very large, exceptionally broad, not folding (except longitudinally in the hind-wings of many, and the fore-wings of a few Moths), clothed with scales both above and beneath. Legs short and weak, little used for walking (especially the first pair, reduced to atrophy in many Butterflies); the coxæ immovable, solidly affixed to the thorax; the middle and hind tibiæ armed with a pair of spurs at their extremity, and the hind ones (except in the typical Butterflies) with a second pair rather beyond their middle; the tarsi five-jointed (except in the fore-legs, when much atrophied).

Abdomen composed of eight or nine segments, sub-cylindrical, elongate, compressed laterally; the anal and genital apertures at its extremity.

(*b.*) *Larva* (or Caterpillar).

Worm-like, cylindrical or sub-cylindrical, presenting thirteen segments (taking the head as the first); the integument generally softer and more elastic than in the Imago. Head hard and horny, divided into two more or less distinct lobes by a frontal depression; inferiorly these lobes are divergent, between them lying the *clypeus.* Eyes not compound, but tubercular and simple (*stemmata*), usually six on each side, situated in a ring at the lower end of the cephalic lobe. Antennæ horny, small, short, conical, three- or four-jointed, situated inferiorly, between the simple eyes and the base of the mandible. Labrum of moderate size. Mandibles large, very hard, strongly and acutely toothed on their inner meeting edges. Labium and maxillæ united; the former lying between the latter, and presenting at its extremity a small tubular organ (*spinneret*) containing the common duct of the two silk-glands, and a pair of very minute palpi; the maxillæ small, much softer than the mandibles, conical, three-jointed, adapted for prehension (*not* mastication), bearing minute palpi near their extremity.

Legs (true) six, borne on the three segments next succeeding the head (which answer to the thorax of the perfect insect), short, horny, cylindrical, composed of five short joints, of which the terminal one (*tarsus*) forms an acute curved claw. Posterior to the sixth segment, a series (two to five pairs) of highly retractile, stout, fleshy "claspers" or pro-legs, fringed at their extremity by numerous small hooked bristles.[1] Breathing-pores (*spiracles*) lateral, inferior, a pair on each segment except the head, and the third, fourth, and thirteenth.

(*c.*) *Pupa* (or Chrysalis).

Elongate, more or less sub-conical, blunt anteriorly, and pointed posteriorly; closely invested by a hard membrane, which binds the developing limbs of the future Imago closely to the breast and basal part of the abdomen, but leaves their form more or less defined; mummy-like, quiescent, only the abdominal segments capable of motion. Regional boundaries of head, thorax, and abdomen distinctly defined by the sutures of the investing membrane (*theca*). Abdomen consisting of nine segments, gradually decreasing to the last, which is more or less acutely pointed. Each abdominal segment except the last bearing a pair of lateral spiracles.

The Eggs (*ova*) laid by Lepidoptera are very variable in form, being found globular, pyriform, regularly ovate, melon-shaped, &c., and the shell or external membrane is very commonly distinguished by intricate raised or impressed sculpturing of the most varied patterns. Their colouring also varies, and is often not uniform, but exhibits contrasted hues in the form of spots or bands.[1] The number produced by the individual mother is usually large; and they are laid, singly or in smaller or larger groups, on the leaves, twigs, or trunks of trees for the most part,—a viscid fluid which invests them on exclusion usually in hardening glueing them to the surface on which they are deposited.

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[1] The seventh, eighth, and ninth segments may want pro-legs (as in the Geometer larvæ), and very rarely the thirteenth or last segment (as in the Bombycid *Dicranura*), but the maximum number is five pairs, and the minimum two pairs. The fifth, sixth, eleventh, and twelfth segments never possess pro-legs.

On emerging from the egg, the young lepidopterous *Larva* or caterpillar is sufficiently advanced in general structure, and in the development of its mouth-parts especially, to enable it at once to begin a more or less active independent life of voracious eating and correspondingly rapid growth. The nature of the integument (which, though not so hard as that of the perfect insect, is, nevertheless, the external skeleton to which the muscles are attached) is such that it does not admit of gradual accessions to suit the growth of the animal, but is only so far accommodating as its natural elasticity allows. It follows that, at a certain point of the animal's increase in bulk, the too limited investing skin must be got rid of, and one of more capacity secreted in its stead. The caterpillar temporarily abstains from eating, and its skin becomes faded, dry, wrinkled, and detached as the new one is developed beneath it. The process of detachment is aided by the dilating and contracting of the segments, and by various other motions of the larva; and at length the old integument splits dorsally, and the insect emerges through the rent. The moult is a most complete one, extending to the head and legs, and even including the fine membranes of some of the principal *internal* organs. The new external skin (which often differs in colour or marking from the discarded one) soon hardens, and the caterpillar resumes feeding with increased zest, sometimes (as I have seen in *Chærocampa Celerio*), in the first place, devouring its old skin. This process of moulting has been recorded to occur from three to as many as ten times, but it appears seldom to take place more than five times. When the caterpillar has attained its full size, after some days it finally leaves off eating, and sets about the necessary preliminaries to assuming the pupa or chrysalis state. It commonly shows much restlessness at this time, wandering about in search of a suitable retreat; and in those kinds which have smooth, brightly-coloured skins there is often a remarkable change to dull and sombre hues. It is now that the large reservoirs of silk are chiefly drawn upon, although the amount employed by members of different groups varies very greatly, from the mere disk to which the caterpillars of many butterflies hook their last segment to the full cocoon fabricated by those of the typical

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[1] Coloured figures of the eggs of forty-two European species are given by M. Th. Goosens in illustration of his memoir, "Les Œufs des Lépidoptères," in the *Annales Soc. Entom. de France* for 1884 (October).

Bombycid moths, so well represented by the common silkworm. Many caterpillars bury themselves in the ground before becoming pupæ; others lie on the surface, only drawing together a leaf or two by silken attachments; some introduce particles of sand, earth, or wood into their cocoons, many hairy larvæ even interweaving their own hairs; and in others, again, a higher degree of protection is obtained by the abundance in the material of a hard-setting gummy secretion. In those cases where the pupa is wholly exposed (as in nearly all butterflies), or is in the incomplete open-meshed sort of cocoon, there is no difficulty in observing the changes in the form of the caterpillar prior to its last moult, which consist mainly in its contracting to much shorter, but at the same time thicker, dimensions, in the acumination of the abdominal region, and in the shrinkage and withdrawal from external projection of the head and legs. The abdominal pro-legs now finally disappear, and it is only in the last cast-off skin of the larva that any record of their having existed remains.

The caterpillars of Lepidoptera exhibit considerable variety in general form, those of several groups not presenting the ordinary sub-cylindrical elongated shape so familiar to all in the silkworm, but being more or less widened, shortened, and depressed. Some have the skin smooth, while in others it is more or less roughened or granulated; and in a great number of others it is set with hairs, bristles, or spines. Among the hairy kinds there is immense diversity in the distribution and arrangement of the hairs, which are sometimes generally dispersed, but as often disposed in tufts, or springing from tubercles, or arranged in bands or local stripes and patches. Some of the more rigid and acute spines in the larvæ of certain Bombycid moths are modified into weapons both defensive and offensive, being not only exceedingly sharp and serrated, so as to pierce and greatly irritate, but grouped in clusters or fascicles exsertible at the will of the animal. No other insect larvæ approach caterpillars in beauty and variegation of colour and marking, whether we look to the smooth or hairy kinds. The few almost colourless or very dull-coloured caterpillars are those that live in the stems or at the roots of plants. The prevalent colour is green, and this is highly protective in concealing from their enemies creatures feeding almost entirely on leaves. But some of the most brilliantly variegated patterns of caterpillars are really protective in nature, as is well seen among the very large and beautiful larvæ of the Hawkmoths (*Sphingidæ*), where the stripes and spots of strongly-contrasted colours are adapted to the lights and shades, the outlines and tints, of the leaves, twigs, and buds of the plants the larvæ frequent. Where this adaptation to surroundings does not prevail, it has been found in many cases that the gaudy, conspicuous caterpillars are unpalatable to birds and other insectivorous animals, and so are not liable to the persecution so generally experienced by their tribe. Some caterpillars of moths (*Psychidæ*, and many of the *Tineæ*) construct from the first a description of cocoon which they carry about with them, and from which only the head and front segments bearing the legs protrude. These silken fabrics are externally both strengthened and disguised by attached pieces of objects among which the larva lives, such as woollen tissue (in the case of the Clothes-Moth caterpillars), sand, small particles of stone, bits of grass, or sticks. In the case of many of the latter, the bits of grass or sticks are most neatly cut of the required length, and firmly secured in most regular order, the whole resembling the conventional *fasces* of the Roman lictor.

Caterpillars are, apparently, of all insect larvæ the most liable to attack by the parasitic Hymenoptera, known as Ichneumon-flies (families *Ichneumonidæ*, *Chalcididæ*, &c.). The female fly is provided with an acute ovipositor, by means of which she pierces the caterpillar's integument, and introduces her eggs. The grubs of the Ichneumon-fly soon hatch in the caterpillar's body, and begin to devour its tissues. They appear to avoid injuring the vital organs, and to derive nearly all, if not the whole, of their sustenance from the spacious fat-body (*corpus adiposum*) which envelops the caterpillar's alimentary canal, &c., and fills almost all the space between those organs and the body-walls. The caterpillar so infested usually lives to attain its full size, and sometimes to assume the chrysalis form, but it never reaches the perfect state, its devourers either emerging to spin their own little cocoons around its skin, or undergoing their metamorphosis within it. Other deadly parasites are the species of *Tachina*, flies of the Order Diptera, which fasten their eggs on the surface of the caterpillar, into whose body the maggots hatched from them penetrate.

There is much difference among caterpillars as regards activity of motion. Those of Butterflies are for the most part remarkably sluggish, scarcely moving except from one leaf to another, and those of the Hawkmoths and higher Bombyces are as a rule but little more active. Among the latter, however, the well-known hairy larvæ of the lovely Tiger-Moths (*Arctiidæ*) are an exception, being frequent and rapid walkers. The caterpillars of many of the lower groups of moths (*Noctuæ*, *Pyrales*, *Geometræ*, and *Tortrices*) are very quick in their motions, a few even exhibiting the power of leaping away when disturbed. The *Geometræ* larvæ almost invariably have only two pairs of "claspers" or pro-legs, situated posteriorly on the tenth and thirteenth segments, with which peculiarity is associated the mode of progression which led to their name; this consisting of their stretching out the body forward and grasping with the true legs near the head, and then bringing up the pro-legs close to the others, so that the long intermediate legless portion of the body is looped or arched. In this way they proceed by long-measured steps, instead of by the continuous undulatory motion of caterpillars with the full complement of pro-legs. These Geometer larvæ have in a great many instances the extraordinary power of keeping the body for hours rigidly extended from its base of attachment by the four posterior pro-legs, at a very considerable angle to the twig on which it rests. This strange attitude, in association with special colouring and configuration, is eminently protective, rendering the caterpillar almost indistinguishable from the twigs it frequents. Many caterpillars of *Noctuæ*, having in addition to two pairs of pro-legs possessed by the Geometers only one pair (on the ninth segment), approximate the latter in their mode of progression, and are commonly known as "half-loopers."

While nearly all lepidopterous larvæ are solitary, or only found in close proximity owing to their having been hatched more or less recently from a cluster of eggs, there are a few among those of moths which are distinctly social, constructing a common silken nest in which they remain until eventually assuming the chrysalis state. The most remarkable of these social larvæ are those of the so-called "Processionary" Bombycid moths, which not only live in community, but, when they leave the nest, proceed in long columns widening from the single leader to many abreast, and return, after feeding, in the same regular order.[1]

On its first disclosure by the moult of the last skin of the caterpillar, the lepidopterous *Pupa* or chrysalis exhibits a soft moist surface, usually of a greenish or yellowish tint, the viscid secretion upon which gradually hardens into a rather thin, but hard and firm, outer casing or horny shell, closely investing the entire body, and binding flatly upon the breast and sides the incipient trunk (*haustellum*), antennæ, palpi, legs, and wings. It is very remarkable that in the chrysalis, from the very first, these various limbs are all distinctly present in outline, or in *mould* as it were, and are to a great extent free from the body at first, though subsequently the investing secretion glues them down.

Pupæ, leading an absolutely quiescent life and requiring no food, present but little variation in comparison to the larvæ. In form, besides being more elongate and slender in some groups than in others, the only marked difference is presented by the chrysalides of most butterflies, in which the head and thorax are more or less sharply angulated. The surface in some is very smooth, but in most more or less granulated or pitted. Many of the angulated butterfly chrysalides bear on the back of the abdomen two rows of tubercles, usually more or less pointed, and in a few cases prolonged into spinous processes. Some of the Bombycid pupæ (*Liparidæ*), and also that of a South-African Lycænid butterfly (*D'Urbania*), have dense tufts of hair.

The colours of pupæ are considerably varied in the case of those fully exposed to the light or in very thin cocoons, but limited to various shades of reddish-brown, deep-brown, or blackish in those enclosed in dense cocoons or buried in the earth. The immense majority of butterfly chrysalides are included in the former class, and some of them (*Nymphalidæ*) exhibit the brilliant golden spots or patches which gave origin to the name of *chrysalis* or *aurelia*. But much of the colouring of these exposed pupæ is protective, closely resembling that of the objects to which they may be attached; and, as has of late been discovered, the general tint of different individuals of the same brood will, in some kinds, be found to vary (within certain limits) in accordance with the colour of the objects upon which they assume the pupal state.[1] Besides this, there are instances where the form as well as the colouring aids in the protective resemblance, as Mr. Mansel Weale and I have shown in the case of the South-African *Papilio Cenea;* and the hirsute chrysalis of *D'Urbania amakosa*, already mentioned, appears from Mrs. Barber's observations to resemble certain lichens growing on the rocks to which it is attached.

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[1] A characteristic "Processionary" inhabits the eastern part of Cape Colony and Natal; it is the *Anaphe Panda* of Boisduval.

Westwood long ago described a Mexican Pieride butterfly (*Eucheira socialis*), the larvæ of which "construct a very strong parchment-like bag, in which they not only reside, but undergo their change to the pupa state;" but he has not recorded, I believe, whether these caterpillars are processionary.

The motions of lepidopterous pupæ are very limited, and those of butterflies, whose caudal extremity is fixed to a silken attachment, are all but motionless. The abdominal segments have, however, considerable freedom of movement in many moths, and such pupæ, by the aid of a strong caudal spine (*mucro*)—and, in some cases, of a series of small dorsal spines on the other segments—are able to push themselves along, either in the ground or in the hollowed interior of the stems of plants. Many display this particular sort of activity when the perfect insect is about ready to emerge.

The structural changes wrought during the chrysalis state of quiescence are astonishingly great. The body becomes distinctly divided into the three heteronomous portions of head, thorax, and abdomen, and covered with scales; ample wings are developed, also covered with scales; the pro-legs disappear, and the true legs as well as the antennæ are much lengthened and completely altered in shape. The eyes are enormously enlarged and developed; and while the united maxillæ and labium are separated and profoundly modified into the long spiral sucking-tube (*haustellum*) and the under-lip bearing well-developed palpi, the large jaws (*mandibles*) are reduced to the merest rudiments. Not less profound are the accompanying internal changes, for the thoracic nervous ganglia become approximated and united into two masses, while the two basal pairs of the abdominal segments are aborted; the alimentary canal is differentiated into well-defined tracts of œsophagus, crop, stomach, &c.; the silk-glands entirely disappear; the great fat-body (*corpus adiposum*) is almost wholly absorbed; and the reproductive organs are fully developed.

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[1] One of the most remarkable cases of this kind is that of the pupæ of the well-known South-African *Papilio Nireus*, recorded by Mrs. Barber in the *Transactions of the Entomological Society of London* for 1874, pp. 519–521. The same observer informs me that the pupæ of *Callidryas Florella* present quite a parallel case.

What renders the transformation the more remarkable is the brief period in which it is commonly accomplished. The duration of the pupa state varies very much, and development is greatly accelerated by a high temperature and retarded by a low one. Among South-African species the shortest time I have noted is in the case of the common butterfly, *Acræa Horta*, which remains only eight or nine days in the chrysalis form during the height of summer, but in the winter months of June and July is twenty-four days developing. As a rule, the smaller species produce the perfect insect much sooner than the large ones. The summer brood of *Papilio Demoleus* is from twenty-one to twenty-four days in the pupa state, but the offspring of this brood remain pupæ from April to September or October. Instances are, moreover, not rare in which certain individuals do not complete their development simultaneously with the rest of the brood, but remain arrested until the corresponding season of the next year, notwithstanding that all the conditions of food, temperature, &c., may have been identical as respects the entire brood. That this " standing over " until next season of a certain number of the year's brood must be of advantage to the species concerned can scarcely be doubted, but in what way it is brought about has not, to the best of my knowledge, been explained.

When the *Imago*, or perfect insect, of the lepidopterous Order makes its appearance from the cracked skin of the pupa, all its organs are completely developed with the exception of the wings. The latter are short, thick, and much folded or wrinkled, but exhibit in miniature the colouring and marking proper to the species. They consist of two separate membranes, upper and under, and are traversed by hollow horny nervures situated between the two membranes. The insect climbs to some situation where it can cling with the little moist crumpled wings hanging freely downward, so that they can gradually expand without obstruction,—a process effected by the steady extension of the nervures. The elongation and stiffening of the latter tubular organs seems to be due to their distension by introduced air, and partly also by the entrance of fluid matter from the body. As the membranes become stretched and tense they approach each other and finally coalesce. This growth of the wings to their full extent is aided by slight movements of the insect in turning from one side to the other, or partly spreading the wings. Except in some of the largest species the process is not of long duration, a few minutes sufficing in the case of the smaller Butterflies,[1] while in some of the largest Moths I have known it to occupy five or six hours.

The Lepidoptera surpass all the other Orders of Insects in the immense size of their wings in comparison with that of the body.

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[1] One of the larger South-African Butterflies, a female *Diadema Misippus*, which I timed from the moment of its complete extrication from the chrysalis, was exactly fifteen minutes in acquiring the full expansion of the wings.

This is especially noticeable in the Butterflies, and reaches its maximum in the *Morphitæ* of tropical South America, in many species of which magnificent group it is difficult to comprehend how the small slender thorax can contain sufficient muscular power to work the enormous wings.[1] The scales, which give to these organs their infinite variety of colouring and marking, and to the Order its name (λεπίς, scale, πτερόν, wing), are planted in the membrane by slender, very minute foot-stalks, and arranged so closely in transverse (not always quite straight) rows, that the basal portions of the scales of each row are hidden by the overlapping outer portions of those of the next row. These scales are in themselves objects of remarkable beauty under the microscope, their shape presenting a wonderful variety of outline, and their surfaces being covered with raised longitudinal and transverse lines forming a reticulation of the utmost minuteness and delicacy.[2]

The entire Order consisting of insects which live solely on fluid nutriment, there is not much variation in the mouth-parts except as regards the adaptation of the trunk or haustellum (modified maxillæ) to obtaining liquid from various sources. A certain number of Moths take no food, their trunk being rudimentary; these mostly belong to the group *Bombyces*, of which the common Silkworm Moth is a familiar example. The great majority of Lepidoptera, however, is in the perfect state dependent on the honey of flowers, and the trunk varies greatly in length in accordance with the form of the nectar-yielding blossoms frequented. The nectaries of many flowers are shallow and open, and to rifle these a short haustellum suffices; but where the honey lies in a long tubular receptacle, a proportionately elongated trunk is necessary. The greatest development of this kind is reached in the typical *Sphingidæ*, or Hawkmoths, which are thus enabled to take their food on the wing, without settling, and to reach supplies shut out from all other members of their Order. Thus, the haustellum of the common and widely-distributed Unicorn Hawkmoth (*Sphinx Convolvuli*) is four inches long, or twice the length of the whole body; and a huge South-American ally, *Amphonyx Cluentius*, has a trunk over nine inches in length. The in many ways aberrant Death's-Head Hawkmoth (*Acherontia Atropos*)—as well-known and much-dreaded in South-Africa as in other parts of the world—has, on the contrary, a short, stiff, broad proboscis, specially adapted for piercing the waxen lid of, and abstracting the honey from the cell of the hive-bee. Again, various large *Noctuæ*—such as the well-known South-African *Achæa Chamælcon*—are able to pierce the skins of peaches and other fruits, and the end of their trunk (as has been well shown by Mr. F. Darwin in the case of the Australian *Ophideres fullonica*, which penetrates even the rind of oranges) is bayonet-shaped and armed with saw-like teeth and ridges.

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[1] Thus in *Morpho Iphictus* the whole body is but an inch long, and the thorax less than half an inch long and a quarter of an inch in breadth, while the fore-wings not only expand six and a half inches from tip to tip, but are two inches broad at the outer edge, and the hind-wings are each two and a half inches long and two inches broad.

[2] A favourite "test object" for some powers of the microscope has long been the scale of a *Morpho* Butterfly,—a good glass giving clear definition of the delicate ridges on the surface of the scale.

The antennæ of Lepidoptera have the characteristics of being well-developed and many-jointed throughout the Order, and in the great majority of genera long and conspicuous. The shortest antennæ are found in the Moths known in England as "Ghosts" and "Swifts" (family *Hepialidæ*), and the longest in the so-called "Long-Horns" among the smallest Moths (family *Tineidæ*). Their form varies greatly, from the simple thread-like (*filiform*), or gently tapering (*setiform*), to the doubly comb-toothed (*bipectinate*) or feathered (*plumose*). Their office has not yet been certainly made out; they do not appear to be employed as many insects of other Orders use them, viz., as feelers or organs of touch; but, if they are the seats of any special sense, it seems probable, from the fact of their being, in very many cases, much more highly developed in the male sex, that they are olfactory.[1] The prominence of the antennæ and the facility with which they can be examined, no less than the fact that their various forms are very characteristic in the main of certain large natural groups, have led to the employment of these organs as representative ones in separating and naming the divisions of the Order. Duméril, in 1823, proposed four such divisions; of which the first, *Ropalocères*, comprised the Butterflies or Clubbed-Horns, having the antennæ knobbed or thickened at the tip; the second, *Clostérocères*, the Moths whose antennæ are thickened about the middle (*fusiform*), included the Sphinges or Hawkmoths; the third, *Nematocères*, or Thread-Horns, contained the Bombyces; and the fourth, *Chétocères*, or Bristle-Horns, was composed of all the remaining Moths. The last of these divisions was a most heterogeneous assemblage, and neither it nor the two preceding divisions (which are comparatively natural ones) have been adopted by any lepidopterist; but the first, *Rhopalocera*, was accepted by Boisduval in 1836, and by Westwood in 1840. The former of these authors professed himself unable to separate the Sphinges from the other Moths as a primary division of the Order, and united all Duméril's three groups into one, which he styled *Heterocera*, or Varied-Horns; and in this also he was followed by Westwood, who stated that he could not admit the minor divisions of the nocturnal Lepidoptera "to a rank equivalent to that of the whole of the Diurna." This simple partition of the Lepidoptera into the two great groups of those with clubs or terminal thickenings of the antennæ, and those without them (however variable the organs may be in other respects), has been generally adopted; and although not satisfactory—the greater of the two divisions being founded on a negative character—it is undoubtedly preferable to the older arrangement into *Diurna, Crepuscularia*, and *Nocturna*, which were mere equivalents of the original Linnæan genera, *Papilio, Sphinx*, and *Phalæna*. The English terms, Butterflies and Moths, exactly correspond to these two Sub-Orders of *Rhopalocera* and *Heterocera*. The name *Rhopalocera* has been objected to on the ground that some Butterflies have no actual club or knob to the antennæ; but these exceptions are few, and even in them there is always, as far as I have seen, a slight and gradual thickening or incrassation towards the extremity of those organs. Herrich-Schäffer announced, in 1843, a further distinction in structure between the antennæ of the two Sub-Orders—viz., that their joints (or at least those of the middle third of the organs) were in the *Rhopalocera* twice as long as, or much longer than, thick; but in the *Heterocera* about equal in length and thickness, or not longer than thick.

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[1] It is noteworthy that the antennæ are very highly developed in the males of those *Bombycidæ* which so readily discover the sedentary female under circumstances (such as enclosure in a shut box) which seem to preclude the employment by them of any but a sense of smell of extraordinary keenness. That this sense is the one exercised seems to be proved by the fact (to which I can testify in the case of *Lasiocampa Quercus*) that males are attracted by the empty box from which a female has been removed.

The present work deals only with the South-African species of the first Sub-Order, viz., the *Rhopalocera* or Butterflies.

RHOPALOCERA.

IMAGO.—Head of moderate size (rather large in the family *Hesperidæ*). *Antennæ* slender; the joints of the middle third longer than broad; some of the terminal joints almost always broadened more or less, so as to form a club; bases of insertion close together (except in the *Hesperidæ*). *Labial palpi* well-developed, ascendent, three-jointed, scaly, more or less hairy (except in many cases the terminal joint); the middle joint almost always the longest. *Haustellum* always well-developed (longest in the *Hesperidæ*). *Stemmata* obsolete.

Thorax compact, rounded anteriorly and posteriorly, usually rather thick and deep, with the sides somewhat flattened; *mesothorax* with its dorsal median suture and posteriorly-situated triangular *scutellum* usually very distinct. *Wings* large and broad, without the bristle and socket (*retinaculum*) found in most *Heterocera*;[1] general outline of fore wings sub-triangular, of hind wings sub-circular; *neuration* almost wholly longitudinal, with the exception of the disco-cellular nervules, and in its main plan the same in both fore and hind wings; near bases, especially in hind wings, usually a clothing of fine hairs as well as of scales; fringe of hair-like scales (*cilia*) projecting from outer edge (hind-margin) of wings usually short. *Legs* slender, rather short; the first pair often atrophied (family *Nymphalidæ*, and males of family *Erycinidæ*); *femora* generally hairy; *tibiæ* and *tarsi* finely spinulose; *tibiæ* of hind pair armed with a terminal pair of spurs only (except in the *Hesperidæ*, almost all of which have an additional pair rather beyond the middle of the joint); *tarsi* terminating in a pair of simple or bifid claws, usually accompanied by a foot-cushion (*pulvillus*) and two bifid supplementary membranaceous claws (*paronychia*).

Abdomen short (except in the Sub-Families *Danainæ*, *Heliconinæ*, and *Acræinæ*), slender, laterally compressed, dorsally arched, and with more or less of a median ridge; the extremity inferiorly obliquely truncate, and fissured longitudinally for the anal and genital outlets.

LARVA.—Usually elongate and sub-cylindrical (but widened and inferiorly flattened—*onisciform*—in Family *Lycænidæ* and in some

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[1] This structure, which links together the fore and hind wings in many Moths (and is particularly well shown in the *Sphinges*), is formed by the free precostal nervure at the base of the hind wing passing through a small horny loop or ring, which arches the subcostal nervure near the base on the under side of the fore wing.

Erycinidæ); smooth, granulated, transversely ribbed, downy, or spiny; always with ten *pro-legs*. *Head* often horned superiorly; *tail* sometimes forked.

PUPA.—Smooth or granulated, usually more or less angulated: *head* with one more or less acute anterior median projection, or two divergent ones; *thorax* dorsally prominent or humped; *abdomen* often dorsally tuberculated, rarely spinose. Attached by the tail to a silken web, and either hanging free vertically or braced horizontally or at an angle by a silken girth. Not enclosed in any cocoon or covering (except in a few *Papilionidæ* and the *Hesperidæ* generally, which are partly enclosed in a leaf drawn together by silken threads, and certain *Satyrinæ* and *Lycænidæ* which are hidden in the ground).

1. *DISTINCTIVE CHARACTERS OF RHOPALOCERA.*

In the diagnosis of the Sub-Order given above, the more prominent characters distinguishing Butterflies are, in the perfect insect, the long-jointed and clubbed antennæ; the absence of *stemmata* or simple eyes, of *retinaculum*, or retaining ring and bristle,[1] and of transverse or reticulated neuration in the wings; and the want (except in one Family) of a second pair of spurs on the tibiæ of the hind-legs. There do not appear to be any points of structure in the larvæ or pupæ which are not discoverable among those of the Sub-Order *Heterocera;* although it is quite an exception to find any pupa of a Moth angulated, freely exposed, or suspended by caudal and median silken attachments, like those of nearly all Butterflies.[2]

There are, however, some secondary characteristics of Butterflies which are worth noting, although not absolutely peculiar to them. The first of these is the distinctness or definition of the colouring and marking of the under side of the wings, which usually displays an entirely different pattern from that of the upper side, and is often more elaborate in decoration, and sometimes more brilliant and varied in hues. The second, which is evidently in close relation to the first, is the almost universal habit of holding the wings vertically when at rest, by which attitude the under side of those organs is (often for a long time) fully exposed, while the upper side is concealed. In Moths the under side of the wings is nearly always duller and paler than the upper side, and any pattern or colouring presented more or less indicates what is on the upper side; and these Lepidoptera, instead of holding the wings erect over the back, deflect them at various angles when at rest, and for the most part so dispose them that the longitudinally folded hind-wings and the abdomen are covered or roofed by the fore-wings. The only group of Moths containing numerous exceptions to this rule is the *Geometræ*, and it is very noteworthy that these alone have the rhopalocerous habit of resting with wings erect.

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[1] Blanchard employed the presence or absence of this character, in naming his two divisions of the Lepidoptera respectively *Chalinoptera* (=*Heterocera* or Moths), and *Achalinoptera* (=*Rhopalocera* or Butterflies).

[2] Until recently I was not aware that any Moth chrysalis existed which was attached *by the tail only*, in the manner so frequent among Butterfly chrysalides, but this case has occurred to me (August 1884) in rearing what I believe to be an aberrant member of the *Tortrices* from larvæ tunnelling the woody receptacle of *Protea mellifera*. The larva was of the ordinary sub-cylindrical form, but the pupa was in appearance intermediate between the Lycænid and Hesperid types, and, to my astonishment, was attached horizontally to the lid of a breeding-cage by the tail only, quite in the manner of several species of *Lycænidæ*. The three larvæ I had all assumed the pupal state in this position, but only one imago was produced. The stout, thick pupa, alike in colour, size, and shape (except for a small pointed projection on the front of the head) nearly resembled that of *Thecla Lynceus* as figured by Duponchel (*Iconogr. Chen.*, pl. viii. fig. 31).

A third distinction of Butterflies is their diurnal flight; but, as certain groups are crepuscular (many *Hesperidæ*, some *Morphitæ*, all the *Brassolinæ*, and a number of *Satyrinæ*), and as a great variety of Moths in all the great divisions, including some entire Families (*Zygænidæ*, *Uranidæ*), are diurnal in their habits, this can only be taken as much more characteristic of Butterflies as a whole than of Moths as a whole.

2. *CLASSIFICATION.*

A satisfactory arrangement of the Sub-Order is admittedly most difficult to arrive at, the fundamental structure of its members (as indeed may be said of the entire Order Lepidoptera) presenting but comparatively slight modifications, and those being often inconstant in character. As regards the *Imago*, the most important features from a classificatory point of view are (1°) the neuration of the wings, (2°) the condition of development of the first pair of legs, and (3°) the presence or absence of a second pair of spurs on the hind pair of legs. In the *Pupa*, the mode of its suspension affords the most trustworthy character, while in the *Larva* the general form, the nature of the dermal appendages, and the smooth or spined condition of the head, are points of chief importance. It is remarkable that in proportion to the atrophy of the first pair of legs, which is *the* character in which the higher Butterflies differ most absolutely from all Moths, the chrysalis is free from silken attachments. Thus the pupæ of the *Hesperidæ*, the group of Butterflies in all respects most intimately related to Moths, and whose fore-legs are invariably fully developed in both sexes, are not only attached by the tail and girt with silk, but also secured by many silken threads, which in many cases form a slight cocoon. Those of the *Papilionidæ*, a family which also has the fore-legs perfect in both sexes, are always attached by the tail and also girt; and, in the case of the remarkable Alpine genus *Parnassius*, the chrysalis, like those of the *Hesperidæ* just mentioned, is further enclosed by many additional silken threads. It is when we come to the *Lycænidæ*, in which, although the fore-legs of the female are perfect, those of the male begin to exhibit the failure of the tarsal articulation and claws, that we first find instances of chrysalides attached by the tail only, but still in a fixed horizontal or slightly inclined position. Going on to the *Erycinidæ*, the males of which have the fore-tarsi smooth and reduced to two joints (or even one only), there appear first a series of girt pupæ, then one of ungirt but rigidly inclined pupæ, and finally—in the Sub-Family *Libythæinæ*—pupæ suspended freely by the tail. This last mode of suspension is universal in the *Nymphalidæ*, the perfect insects of which display reduced and atrophied fore-legs in both sexes. In the males of these *tetrapod* or "four-legged" Butterflies, and even in the females of some in the Sub-Families *Danainæ* and *Satyrinæ*, the fore-legs are so reduced as to be hardly noticeable in their folded position against the prothorax.

In the neuration the most serviceable distinctive characters are to be found in the number and points of origin of the branches or *nervules* of the subcostal nervure of the fore-wings, and in the completeness or otherwise of the transverse or oblique disco-cellular nervules, which serve to connect, in both fore and hind wings, the discoidal or radial nervules (the main trunk or *nervure* of which is atrophied in all Butterflies), with the subcostal nervure above them and the median nervure below them.[1] The short disco-cellular nervules in question constitute the outer limit of the so-called *discoidal cell*, lying between the subcostal and median nervures; when the lowest of these nervules is developed the discoidal cell is said to be *closed*, and when it is obsolete or rudimentary the cell is styled *open*.

As regards the presence of a second pair of spurs on the tibiæ of the hind-legs, this is among Butterflies a feature of the *Hesperidæ* only. But this aberrant and curious family, by common consent the nearest to Moths, possesses a kindred feature common and peculiar to itself and the *Papilioninæ* only, viz., a process or expansion, sometimes acuminate, on the inner side of the tibia of the fore-legs.

Further aids to the scientific arrangement of the Butterflies are to be found in the length and gradual or abrupt clavation of the antennæ; the size and clothing of the labial palpi; the smoothness or downiness of the compound eyes; the size, shape, clothing, and texture of the wings, and the prevalent colouring and pattern of the latter organs. The two last named of these are of considerably more weight in the Lepidoptera than in the other Orders of Insects; the coloured scales on the immense area of the wings being apparently affected in their arrangement and tints in direct relation to any modification arising in the species, and so serving, as Mr. Bates has well observed,[2] as natural tablets on which are registered all the changes of organisation, however small.

The claws at the end of the tarsi, with their curious appendages (first illustrated carefully by M. Doyère in 1843, and afterwards so thoroughly examined by Messrs. Doubleday and Westwood in their *Genera of Diurnal Lepidoptera*), present features worth considering in comparing the structure of the different groups. The claws themselves (*ungues*) seem to be simple throughout the various Families, except in the Sub-Family *Pierinæ*, in many genera of the *Satyrinæ*, and in a single species of *Papilioninæ*,[1] where they are more or less deeply bifid. But the appendages to the claws, termed *pulvillus* and *paronychia*, are more or less developed in all groups, except in some of the sub-family *Danainæ*, in the *Acræinæ*, and in the *Papilioninæ;* and they appear to attain their greatest development in the Sub-Family *Nymphalinæ*.

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[1] I adopt Doubleday's modification of Lefebvre's analysis of the system of neuration in the Lepidoptera, given by the former in the *Transactions of the Linnean Society*, 1845, vol. xix. pp. 477–485, and in *Genera of Diurnal Lepidoptera*, i. p. 31 (1847).

[2] *Naturalist on the Amazons*, 2d edit., p. 413.

Taking into consideration all the details of structure above mentioned, and having regard to the earlier stages as well as to the adult or perfect state, an approximately natural arrangement of butterflies is arrived at; but, as is the case throughout Nature, the linear or serial classification, which for convenience has to be employed, can only very inadequately represent the affinities which exist.

In consequence, originally, of Linné's beginning his genus *Papilio* (equivalent to the whole group of Butterflies) with his so-named *Equites*, and of these being naturally retained as the representatives of the restricted *Papiliones*, when that great genus was broken up into several others, it remained for many years the practice to place the Family *Papilionidæ* at the head of the Sub-Order *Rhopalocera*, and to put between them and the *Hesperidæ* all the remaining groups. Though Herrich-Schaeffer in 1843 (*Syst. Bearb. der Schmett. von Europa*, i. p. 16) amended this by commencing the series with the *Nymphalides*, continuing with the *Libytheides* and *Erycinides*, and placing the *Pierides*, *Lycænides*, and finally the *Equitides*, next above the *Hesperides* (which he separated altogether from the other Butterflies); yet, mainly I think from the influence of Boisduval's system, published in 1836, which placed the *Suspensi* (= entire Family *Nymphalidæ*) between the *Succincti* (= Families *Papilionidæ* and *Lycænidæ* and most *Erycinidæ*) and the *Involuti* (=*Hesperidæ*), the more natural classification was not adopted by entomologists generally. The magnificent *Genera of Diurnal Lepidoptera* of Doubleday and Westwood (1846–52) perpetuated the old arrangement, which was adopted by all English lepidopterists, and followed by myself in *Rhopalocera Africæ Australis* (1862–66). The adoption of late years of the more natural system is mainly due to the able advocacy of it by Mr. H. W. Bates, whose memoirs dealing with the matter appeared in the *Journal of Entomology* (1861 and 1864) and in the *Transactions of*

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[1] One of the genus *Leptocircus*. Doubleday (*Gen. Diurn. Lep.*, i. p. 23) records this exception, at the same time mentioning that in the only other known species of the genus the claws are simple! Blanchard, with evident reference to this case, abandons (*Metam. etc. des Insectes*, 1868, p. 160) the idea that the structure of the claws can be employed with any advantage in distinguishing genera or groups; but this appears to me to be too sweeping a decision.

the Linnean Society, vol. xxiii. (1862).[1] Mr. Bates's later arrangement, the details of which are given at p. 176 of the *Journal of Entomology* for 1864, will be followed in this work, and the linear order stands thus, viz. :—

Family I.—NYMPHALIDÆ.
  Sub-Family 1.—*Danainæ.*
  ,, 2.—*Satyrinæ.*
  ,, 3.—*Brassolinæ.*
  ,, 4.—*Acræinæ.*
  ,, 5.—*Heliconinæ.*
  ,, 6.—*Nymphalinæ.*

Family II.—ERYCINIDÆ.
  Sub-Family 1.—*Libythæinæ.*
  ,, 2.—*Stalachtinæ.*
  ,, 3.—*Erycininæ.*

Family III.—LYCÆNIDÆ.

Family IV.—PAPILIONIDÆ.
  Sub-Family 1.—*Pierinæ.*
  ,, 2.—*Papilioninæ.*

Family V.—HESPERIDÆ.

In this classification the Family characters employed by Mr. Bates are those above mentioned, viz., the structure of the fore-tarsi in both sexes, and the mode of suspension of the pupa. For the grouping of the Sub-Families of the *Nymphalidæ* he relies firstly on the development or atrophy of the lower disco-cellular nervule at the extremity of the discoidal cell; secondly, on the shape and clothing of the larvæ; thirdly, on the clothing of the palpi; and fourthly, on the presence or absence of a pre-discoidal cell in the hind-wings. He divides the three Sub-Families of the *Erycinidæ* in accordance with the mode of suspension of the pupa, either freely by the tail only, rigidly in an inclined position by the tail only, or by the tail and a girdle.[2] The two Sub-Families of the *Papilionidæ* are separated by the circumstance that in the *Papilioninæ* the inner margin of the hind-wings is hollowed or curved inwards, while in the *Pierinæ* it is convexly prominent.

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[1] Mr. A. R. Wallace, whose opinion is entitled to the most careful consideration, opposed the removal of the *Papilionidæ* from the head of the Butterflies in his most excellent paper on the Malayan members of the Family in vol. xxv. of the same *Transactions;* and after I had, in vol. xxvi. (1869), adduced various structures in which the *Papilionidæ* showed their affinity to the Moths, he argued at length, as late as 1871 (see his *Contributions to the Theory of Natural Selection*, 2d edit.), in favour of their being retained at the summit of the Rhopalocera. But in his *Geographical Distribution of Animals* (vol. ii. 1876) I was glad to notice that he had virtually abandoned his contention, by placing (p. 479) the Family at the end of the series, next above the *Hesperidæ.*

[2] In a subsequent paper of great value on the entire Family *Erycinidæ* (*Journ. Linn. Soc., Zool.*, ix. p. 367, 1868), Mr. Bates gave up this character of the position of the pupa as distinctive of the Sub-Families, having found that in a species of *Emesis*, one of the *Erycininæ*, the pupa was suspended as in the typical *Stalachtinæ.* He omits the *Libythæinæ*, and arranges the Family into *Nemeobiinæ*, *Eurygoninæ*, and *Erycininæ*, in accordance with the number of branches of the subcostal nervure of the fore-wings, and (in *Eurygoninæ*) the position of the lower radial nervule in the hind-wings. As it is preferable, for purposes of classification, to depend upon the characters of the imago, it will be well to accept this amendment, but at the same time not to exclude the *Libythæinæ.*

The following tabular view of the Rhopalocera, in which only the characters of the Perfect Insects are employed, may be found helpful in determining the Family and Sub-Family to which any given butterfly may belong.

SUB-ORDER RHOPALOCERA.

A. Antennæ close together at origin; tibiæ of hind pair of legs with a terminal pair of spurs only.

- *B.* Tarsi of first pair of legs imperfect, and the whole limb much reduced in both sexes.
  Family I.—NYMPHALIDÆ.

  - *c.* Discoidal cell of hind-wings closed.
    - *d.* Hind-wings without a pre-discoidal cell.
      - *e.* Palpi very short, slender.
        Sub-Family 1.—*Danainæ.*
      - *ee.* Palpi of moderate length or long, not slender.
        - *f.* Fore-wings short, broad; their nervures often swollen at the base.
          Sub-Family 2.—*Satyrinæ.*
        - *ff.* Fore-wings much elongated, narrow; their nervures never swollen at the base.
          - *g.* Tarsal claws without appendages, but much enlarged basally; head of moderate breadth.
            Sub-Family 4.—*Acræinæ.*
          - *gg.* Tarsal claws with paronychia and pulvillus; head very broad.
            Sub-Family 5.—*Heliconinæ.*
    - *dd.* Hind-wings with a pre-discoidal cell.
      Sub-Family 3.—*Brassolinæ.*
  - *cc.* Discoidal cell of hind-wings open or incompletely closed.
    Sub-Family 6.—*Nymphalinæ.*

- *BB.* Tarsi of first pair of legs imperfect in male, perfect in female.
  Family II.—ERYCINIDÆ.

  - *h.* Palpi very long.
    Sub-Family 1.—*Libythæinæ.*
  - *hh.* Palpi of moderate length or short.
    - *i.* Subcostal nervure of fore-wings with four branches.
      Sub-Family 2.—*Nemeobiinæ.*
    - *ii.* Subcostal nervure of fore-wings with from two to four branches; radial (or discoidal) nervule of hind-wings intimately connected with subcostal nervure.
      Sub-Family 3.—*Eurygoninæ.*

iii. Subcostal nervure of fore-wings with three (in one species only two) branches; radial nervule of hind-wing somewhat disconnected from subcostal nervure, being united to it only by an imperfect transverse nervule.
Sub-Family 4.—*Erycininæ.*

BBB. Tarsi of first pair of legs in male wanting one or both claws, but spined beneath; perfect in female.
Family III.—LYCÆNIDÆ.

BBBB. Tarsi of first pair of legs perfect in both sexes.
Family IV.—PAPILIONIDÆ.

k. Tarsal claws bifid; inner margin of hind-wings prominently rounded.
Sub-Family 1.—*Pierinæ.*

kk. Tarsal claws simple; inner margin of hind-wings hollowed; tibiæ of first pair of legs with a small process on their inner edge.
Sub-Family 2.—*Papilioninæ.*

AA. Antennæ wide apart at origin; tibiæ of hind pair of legs with an additional pair of spurs rather beyond the middle.
Family V.—HESPERIDÆ.

3. *GEOGRAPHICAL DISTRIBUTION.*

Taken as a group, Butterflies may be described as of almost universal distribution over the earth, there being scarcely any known spots [1] (except in the Antarctic lands and islands) where in the summer, at least in favourable years, some species do not occur. In the highest northern latitudes yet explored various kinds have been met with, even Grinnell Land, in the extreme north of America (between lat. 78° and 83°), having yielded five species belonging to three families.[2] The most southern known station of Butterflies is at the other extremity of America, several kinds inhabiting Tierra del Fuego, on the shore of the Strait of Magellan. These remote outposts are, however, highly unfavourable to butterfly existence, which finds its highest development in the Tropical Regions, and, speaking generally, thins out and wanes in proportion to distance from the equatorial belt. In the same way, as a broad rule, these insects become scarcer as a higher altitude is reached, although there are many peculiar and abundant alpine forms; and where flowering vegetation dies out, the limit of the actual *habitat* of Rhopalocera is found, seeing that the larvæ are exclusively, and the perfect insects almost exclusively, dependent on the higher plants for food. It is very noteworthy that the Butterflies met with at great altitudes are of the same genera, and sometimes even of the same species, as those found in the highest latitudes; and this intimate alliance of high alpine and circumpolar forms points with unmistakable significance—as in the parallel case in plants—to the long prevalence of the last cold period or glacial epoch.[1]

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[1] Iceland is perhaps one; Dr. Staudinger, the well-known lepidopterist, having found no butterflies among the thirty-three species of Lepidoptera he collected in that island. But I believe he only collected during a single season; and several butterflies have been reported as inhabiting Iceland.

[2] See M'Lachlan's Report on the Insects collected on the Arctic Expedition of the "Alert" and "Discovery" in 1875–76 (*Journ. Linn. Soc., Zool.*, xxv. p. 98, 1878).

Of the five Families of Butterflies, the *Nymphalidæ*, *Lycænidæ*, and *Papilionidæ* are the most widely and generally distributed; but two Sub-Families of the first of these, viz., the *Heliconinæ* and *Brassolinæ*, are peculiar to Tropical America (Neotropical Region), and the Sub-Family *Papilioninæ* of the third is very poorly represented in Europe and temperate Asia (Palæarctic Region) and in North America. The *Erycinidæ* have one Sub-Family, the *Libytheinæ*, which (though consisting of but one genus and twelve species) ranges over the globe—without penetrating, however, into the coldest parts; but while the *Nemeobiinæ* have a few representatives scattered about the world, the great majority of them is Neotropical; and the remaining Sub-Families, *Eurygoninæ* and *Erycininæ*, are confined to America, where but very few of the latter exist north of Mexico, by far the larger part and all the *Eurygoninæ* being limited to the tropical (chiefly Brazilian) lands. The *Hesperidæ*, although very much more generally spread than the *Erycinidæ*, still find their metropolis in the wonderfully rich Neotropical Region, twenty of the thirty-three genera recorded from there being peculiar to it, and several of those genera containing very numerous species. Two Sub-Families of the *Nymphalidæ*, the *Danainæ* and *Acræinæ*, may also be regarded as by no means of general distribution, because, although both have a very wide range of longitude, and the former group sends a few stragglers into the Nearctic and Palæarctic Regions, they are almost wholly tropical and sub-tropical in their range; the *Danainæ* prevailing in the Neotropical and Oriental Regions, and the *Acræinæ* in Africa and its islands (Ethiopian Region).

Tropical America is undoubtedly by far the most productive region for Rhopalocera. Some idea of its riches may be formed from the facts that at Parà, at the mouth of the Amazons River, a year's collecting yielded Mr. Bates about 600 species; and that in four years, at Ega, on the Upper Amazons, he obtained 550 species. Parà has actually produced no less than 700 species. Mr. Wallace notes (*Geogr. Distrib. of Animals,* ii. p. 14) that no less than about 200 genera, or not far short of half the total number (431) of known genera, are peculiar to the Neotropical Region; and Mr. Kirby's Catalogue shows that more than half the entire number of known species have been found within its limits. The Oriental Region, consisting of Tropical Asia and the Indo-Malayan Archipelago, holds the second place, and yields an immense variety of forms,—Mr. Wallace observing that a few months' assiduous collecting in any of the Malay islands will produce from 150 to 250 species, and that thirty or forty species may be obtained any fine day in good localities (*Tropical Nature,* &c., p. 74, 1878). Africa, so far as we know at present, is, in comparison with the two regions just mentioned, very poor; the whole number recorded for the Ethiopian Region (which extends to the Tropic of Cancer northward, and includes Madagascar and various groups of small islands) by Mr. W. F. Kirby[1] being but little over a thousand species. The Australian Region would be less productive than the Ethiopian were the continent of Australia alone to be considered, its poverty in butterflies, except in the north and north-east, being most surprising; but when with Mr. Wallace we add the very rich Austro-Malayan islands, the number and variety are greatly augmented,—New Guinea, the Moluccas, and Celebes yielding a long series of splendid forms. The Palæarctic Region, notwithstanding its enormous area, lies wholly beyond the Tropic; and although its western half (Europe and the Mediterranean basin) has been incomparably better searched than any other division of the globe, it has not yielded more than about five hundred species.[2]

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[1] As the climate in either Northern or Southern Hemisphere grew continuously colder, it seems clear—as so many able naturalists have pointed out—that there must have been a gradual retreat towards the equator of animals and plants of temperate latitudes, accompanied by a simultaneous advance in the same direction of the organisms characteristic of the frigid zone. The geological evidence shows how very severe cold prevailed over the present temperate latitudes; and it is reasonable to suppose that, when at length gradually rising temperature set in, and the organisms unfitted for a warm climate had to retreat in the direction of the pole, many animals and plants existing at the base or on the foot-hills of mountains would, as time went on, find their refuge at hand on the higher elevations, and finally remain isolated there, while their kindred were driven to higher latitudes, and supplanted in temperate lowlands by the advancing forms from nearer the equator.

The Nearctic or North American Region, in strange contrast to the Neotropical, is no richer than the Palæarctic one, except in the fact that, while the number of known species in the two regions is about the same, the area of the Nearctic is estimated at less than half that of the Palæarctic Region. Generically, all the forms of the former are represented in the latter region.

Oceanic islands are particularly poor in Rhopalocera, whether lying in tropical or temperate latitudes, and in this respect—as, indeed, in regard to their entire fauna and flora—exhibit (as Darwin, and especially Wallace, have shown) a marked contrast to both recent and ancient "continental" islands, viz., those which have at some time been connected with a continent. All the isolated Atlantic islands, and many of the very numerous Pacific ones, are cases in point, the few butterflies they possess being unmistakably, for the most part, chance settlers from other lands—usually the nearest continent—or their slightly modified descendants. But there is no case of the kind so striking as that of New Zealand, which, though 1200 miles distant from Australia, lies wholly in temperate latitudes (between 33° and 53° S.), is in extreme length 1100 miles, and has an area not much less than that of Great Britain and Ireland, but has not hitherto yielded more than sixteen species, of which, as Mr. A. G. Butler points out,[1] six are probably of Australian origin, and one is a recent introduction from America. This extraordinary scarcity is the more apparent when it is remembered that the British Isles, one of the very poorest countries in Europe for butterflies, have sixty-three undoubtedly native species.

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[1] In his most careful and invaluable *Synonymic Catalogue of Diurnal Lepidoptera* (1871), and Supplement (1877).

[2] Dr. Staudinger's very thorough *Catalog der Lepidopteren des Europæischen Faunengebiets* (1871) gives 456 species arranged in 44 genera.

The total number of Rhopalocera now known to science must be between ten and eleven thousand. Mr. W. F. Kirby's *Synonymic Catalogue*, published in 1871, included about 7700 species, and his Supplement of 1877 enumerated nearly 1800 additional forms brought to light during the intervening six years, making together about 9500 species. Taking the five families in the order of their respective numbers, it is found they stand as follows, viz.:—1. *Nymphalidæ*, 4040; 2. *Lycænidæ*, 1550; 3. *Hesperidæ*, 1550; 4. *Papilionidæ*, 1400; 5. *Erycinidæ*, 900. The continual discovery of new species is not likely to change this order of numerical relation between the families; but almost certainly the ranks of the smaller members of the *Lycænidæ* and *Hesperidæ* will be largely augmented, and the great disparity in numbers between those families and the *Nymphalidæ* proportionately reduced. When the twelve Sub-Families are placed according to the number of species they respectively contain (the *Lycænidæ* and *Hesperidæ* are excluded from this series, not being divided into Sub-Families), they stand thus, viz.:—

1. Nymphalinæ, ...	1980	7. Nemeobiinæ, . . .	170
2. Satyrinæ, ...	1040	8. Heliconinæ, . . .	150
3. Pierinæ, ...	900	9. Acræinæ, ...	140
4. Danainæ, ...	680	10. Eurygoninæ, . . .	90
5. Erycininæ, ...	650	11. Brassolinæ . . .	70
6. Papilioninæ, ...	510	12. Libythæinæ, . . .	11

The Ethiopian Region, of which extra-tropical Southern Africa constitutes a characteristic zoological province or "Sub-Region," has all the families and eight of the twelve sub-families, the four of the latter that are not represented being the *Heliconinæ* and *Brassolinæ* among the *Nymphalidæ*, and the *Erycininæ* and *Eurygoninæ* among the *Erycinidæ*. South Africa is poorer by one sub-family than the Region, having hitherto yielded no representative of the *Nemeobiinæ*.

4. *DIFFERENCES PRESENTED BY THE SEXES.*

With very few exceptions, the male is smaller than the female, and his wings are comparatively narrower, the fore-wings often being more pointed. The abdomen of the male is more slender and compact, and laterally compressed, while the thorax is relatively larger and thicker. The more atrophied condition of the fore-tarsi in the male of three of the five Families has been already treated of; in contrast to those of the female, the fore-tarsi are especially noticeable for their imperfect development in the male *Erycinidæ*. This sex is also distinguished in many genera by various badges on the wings, consisting of a small sac (*Danais*), smooth patches of peculiarly arranged scales (*Euplœa*), streaks of short appressed hairs along the nervures (*Argynnis*, some species of *Papilio*), or tufts of hair (*Callidryas*, *Mycalesis*).[1] The prehensile or clasping organs at the extremity of the abdomen, although not very apparent externally (except in the *Papilioninæ*, where the outer valves are conspicuous), are of remarkable development and complexity; and in all cases where the sexes are much alike in general appearance they afford with a little pressure a certain means of determining the male.[2] Many of the *Danainæ* (genera *Danais*, *Euplœa*, *Amauris*, *Lycorea*, *Ituna*) possess, in the same region of the body, a pair of elongate organs provided with a dense terminal fascicle of radiating hairs, which do not appear to be often exserted, and which I have found only in the males. Where there is much difference in colouring, it is almost always the male that is the more brilliant in hue, most of the notable exceptions being cases in which the female has been modified in protective resemblance to some species of another group. In the *Danainæ*, the *Heliconinæ*, a large number of the *Satyrinæ* and *Nymphalinæ*, most *Papilioninæ* and some *Lycænidæ*, the sexes are alike, or differ merely in the female being somewhat duller than the male, and the same may be said of most of the *Hesperidæ*. Among the *Acræinæ*, on the contrary, it is rare to find a species whose sexes are alike. It must be noted, however, that in the cases of widest dissimilarity between the sexes, it is almost invariably *only the upper surface* of the wings that exhibits so great a contrast, the under surface presenting very slight, if any, differences.[3] The manifest reason of this is that, with scarcely an exception, the colouring of the under side (exposed when the butterfly is at rest) is more or less protective, from its obscurity or its resemblance to the tints of the customary surroundings.

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[1] *Trans. Wellington Philos. Soc.*, 1878, p. 263.

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[1] These are regarded as scent-organs by Fritz Müller and some other observers; but I have not seen proof of this view adduced, and am disposed, with Mr. Bates, to regard them as "an outgrowth of the male organisation," without special function.

[2] These accessory male organs have been carefully investigated by Dr. F. Buchanan White throughout the European Butterflies, and by Mr. P. H. Gosse in the genus *Papilio* from all parts of the world. In the allied group of *Trichoptera*, Mr. R. M'Lachlan has found in the homologous parts good classificatory characters; but the astonishing differences which they exhibit in closely-allied species of the genus *Papilio* (*e.g.*, *P. Demoleus* of Africa and *P. Erithonius* of India, or the African *P. Nireus* and *Bromius*) render them apparently of little value for systematic arrangement. See *Trans. Linn. Soc.*, *Zool.*, 2d Series, vol. i. p. 357, and vol. ii. p. 265 (1877 and 1883).

[3] This is practically a character of the greatest assistance to the collector and student, enabling him to identify the sexes of a species in numberless instances where, if *both* surfaces of the wings had greatly differed, it would have been impossible to arrive at any satisfactory conclusion.

In two genera of butterflies, viz., *Acræa* of the Sub-Family *Acræinæ*, and *Parnassius* of the Sub-Family *Papilioninæ*—which are very remote from each other in almost every respect except their semi-transparent wings—the females exhibit a very remarkable and quite peculiar structure, in the form of a horny pouch or sac, attached to the under side of the abdomen. In *Acræa* this appendage is on the penultimate segment, and is of moderate size, being best developed in *A. Neobule* and *A. Horta;* but in *Parnassius* it is much larger, and in *P. Delius* is widely open posteriorly, and occupies the whole under side of the abdomen. The use of this pouch—which is often detached and lost during life—has not been satisfactorily determined.

A curious difference between the sexes is presented in several genera of *Lycænidæ*,—such as *Eumæus*, *Myrina*, *Deudorix*, and *Capys*,—where the palpi of the female are considerably longer than those of the male. The same character is noted by Westwood (in *Gen. Diurn. Lep.*) as occurring in three genera of *Erycinidæ*, viz., *Alesia*, *Nymphidium*, and *Aricoris.*

It occasionally happens that the male and female characters are combined in one and the same individual butterfly, and, where the secondary sexual differences are very marked, the appearance of such an example is very singular. Boisduval (*Sp. Gen. Lep.*, i. p. 27) mentions eight species of which so-called "hermaphrodite" individuals had been noticed by authors, and a good many other cases have been recorded. A recent instance in South Africa is that of a specimen of *Lycæna Telicanus* (Var. *pulchra*, Murray), taken near Grahamstown by Mr. F. Billinghurst, in which the wings of the right side are of the female pattern and colouring, while the left-hand wings are of those of the male.

5. *HAUNTS AND HABITS.*

The dependence of Butterflies on vegetation (especially in their caterpillar state), and their need of shelter from high winds, explain how it is that they chiefly abound in wooded districts. Sunshine, a still atmosphere, and flowers are the surroundings most favourable to the great majority of them: in exposed spots, when the weather is boisterous, nearly all species are helplessly driven before the gale, and they speedily succumb to combined cold and rain. There exists, of course, a large number of species found in open country, and many are peculiar to such tracts (especially in mountain stations), but forest-clad lands are incomparably richer. Only a few butterflies, however, inhabit the depths of woods, the great gathering of them being on the outskirts, or where the forest is broken by open spots and the sunshine has access. In South Africa, the richest collecting-ground is the wooded coast of Kaffraria, Natal, and Zululand, and the country about Delagoa Bay seems almost equally productive.

The food of these insects in their perfect state consists mainly of the honey of flowers, and this renders them of great importance to the world of plants; their downy heads and bodies, and in some cases their long trunks, conveying the pollen to the stigma of the flowers which they visit. Hermann Müller has well indicated (*Befruchtung der Blumen*, Engl. transl., 1883, p. 594, &c.) how exactly and reciprocally many flowers and butterflies are thus adapted to serve each others' purposes, especially in the Alps, whose exceptionally brilliant flora appears to lay itself out, as it were, to attract the Rhopalocera, which are more numerous at considerable altitudes than any other group of diurnal insects. Many other liquid substances, however, prove attractive to butterflies,—water, the juice of fruits, sap of trees and other plants, and even animal excreta, blood, and decomposing matter attracting various species.[1] It is not uncommon to find small clusters or groups of various species drinking at damp sand or mud on the edge of water; and observers on the great tropical rivers never fail to notice the brilliant effect of the larger assemblies of this description there prevalent. The butterflies that affect the stronger drinks above mentioned are chiefly members of the Sub-Family *Nymphalinæ*, some of which (the genus *Charaxes*, for instance) appear never to visit flowers; but several *Lycænidæ* and some of other groups are found indulging in the same liquids, especially at the sap exuding from the wounds in trees. The compound of sugar and beer used by collectors to attract nocturnal moths proves also very seductive to butterflies with the tastes described, and may be used with considerable effect in bringing some of the high and rapid flyers within reach. There are, again, a good many species that appear to take little or no food in their *imago* state; such are various *Satyrinæ* and *Lycænidæ*, and apparently nearly all the *Erycinidæ*, of which latter Mr. Bates observes[2] that very few species frequent flowers, though he mentions that some were noticed imbibing the moisture from damp sand.[3]

The flight of butterflies varies very greatly in speed, height, and duration. The *Danainæ*, *Acræinæ*, and *Satyrinæ* are nearly all slow flyers, and the latter are erratic and wavering, and seldom rise far above the herbage. The *Erycinidæ*, *Lycænidæ*, and *Hesperidæ*—especially the latter—are all characterised by the shortness of their flight, though they show every degree of speed. Most of the *Pierinæ* are very active insects, and they exhibit the peculiarity of travelling onward in one direction, instead of fluttering about particular spots. Nearly all the *Papilioninæ* have a powerful sustained flight, and some soar to a considerable elevation. For habitual high flight certain groups of *Nymphalinæ*, represented by the genera *Morpho* and *Charaxes*, are most noticeable, those of the latter group being also immensely rapid on the wing. The males are in all butterflies the stronger and more frequent flyers; but this difference is less pronounced in the *Nymphalinæ* than in the other divisions. In South America, as Mr. Bates and Mr. Wallace inform us, the males of many *Nymphalinæ* and *Pierinæ* congregate in sunny open places in the forenoon, while the females remain retired in the forests, to which the males resort in the afternoon. In the South African woods I have noticed that the fine pale-yellow males of *Papilio Cenea* follow a set course during all the forenoon, sometimes sporting with each other, or stopping on their way to visit flowers, but not diverging far from the circular track they pursue. The females, however, keep near the ground and fly but slowly, often, too, remaining motionless for a long time in some shady spot.[1] Colonel Bowker and Mr. W. D. Gooch have noticed the same habits in the grand *Papilio ophidicephalus*. The males of many butterflies are very combative, not only in rivalry with those of their own species, but with members of wholly different families. I have observed this chiefly with members of the *Nymphalinæ*, *Lycænidæ*, and *Hesperidæ;* and it has often amused me to see a pugnacious little "Copper" or "Skipper" take up his station on some tall flower, and persistently drive off all other visitors. Having no offensive weapons, butterflies' encounters do not lead to more serious results than the impairing of their beauty to a small extent; but they sometimes show much pertinacity in their conflicts. Captain Harford sent me, through Colonel Bowker, in 1879, two males (differently coloured) of *Acræa Encedon*, which he had observed struggling together on the ground for a long time; and Mrs. Barber informs me that even the females of *Acræa Horta* contest with much fury the possession of a leaf on which to deposit their eggs. From certain observations of Colonel Bowker in 1882 at D'Urban, Natal, on the *Diadema Misippus*, it appears that this determined defence by the male of a particular station is in some cases due to the fact of there being in the immediate vicinity the chrysalis of a female just about to disclose the perfect insect; and this is confirmed by Mr. W. H. Edwards' notes on *Heliconia Charitonia* in the Southern United States, and the Rev. W. D. Cowan's on *Papilio Demoleus* in Madagascar.[2]

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[1] Oberthür has observed (*Etudes d'Entomologie*, i. p. 17, 1876) that the beautiful *Teracolus Charlonia* (Donzel) of Northern Africa seemed to be attracted by the sweat of horses; and Mr. H. O. Forbes records (*Naturalist's Wanderings in Eastern Archipelago*, p. 138, 1885) that in Sumatra *Euplœa Ochsenheimeri* settled numerously on the perspiring bodies of the natives and on his own hands; and that another large butterfly, *Cynthia Juliana*, was also often caught at the bodies of the natives.

[2] *Journ. Linn. Soc., Zool.*, ix. p. 369 (1868).

[3] *Naturalist on the Amazons*, 2d edit., p. 331.

The carriage of the wings when at rest varies a good deal among butterflies, and is not always the same during a mere temporary suspension of activity and during prolonged repose. The erect position of all four wings is the most general, and prevails among the *Nym-*

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[1] Mr. J. P. Mansel Weale notes (*Trans. Ent. Soc. Lond.*, 1873, p. 132) that in the later afternoon the females show themselves more, and are then hotly pursued by the rival males.

[2] See *Proc. Ent. Soc. Lond.*, 1882, p. iv.

phalidæ, *Lycænidæ*, *Pierinæ*, and many *Erycinidæ*; but most of these, when temporarily settled, open and shut the wings, or keep them a little apart. The *Papilioninæ* usually settle with wings erect, but are fond of resting with the wings expanded, in such a way that the hind-wings are more or less covered by the fore-wings; and they have further the peculiar habit, when visiting flowers, of keeping the wings in rapid vibration. The *Lycænidæ* universally, when settled temporarily, proceed to move the erect or half-erect hind-wings alternately up and down.[1] A large number of *Erycinidæ* and some *Hesperidæ* keep their wings fully extended when at rest on leaves or on the ground, but many of the latter have the fore-wings only, and a few all the wings, erect. It is not easy to discover butterflies when really in a state of prolonged rest or of sleep, but those noticed lower the closed front wings between the hind-wings, so that only the apical part of the former remains exposed. It is most noticeable that, with very rare exceptions, this apical part of the fore-wings is coloured in accordance with the under side of the hind-wings, and that by this attitude the conspicuous colours and marks so often found on the disk of the under side of the fore-wings are completely concealed.[2] While most butterflies perch on flowers or leaves, many are fond of sunning themselves on bare twigs or on the ground. Others (among the *Nymphalinæ* and *Satyrinæ*) prefer the stems of trees, and many of these always sit so that their heads are downward. Some of the same groups commonly settle on rocks or on the sides of overhanging banks; and it is not rare among these, as well as among those that frequent tree-trunks, to find little companies of a dozen or more sitting close together in a sheltered cranny. Such cases recall the hibernating *Nymphalinæ* and *Pierinæ* of Northern Europe and other countries, which in the autumn find refuges in which to sleep away the winter, emerging in the ensuing spring.

Male butterflies usually make their appearance before the females, and appear, as a rule, to be more numerous. The less active and more retiring habits of the females no doubt render this disproportion in numbers greater apparently than it really is, but observation has convinced me that there is in most cases a decided majority of males.[3] It is common to see a female "mobbed" (as Professor Moseley says of the magnificent *Ornithoptera Poseidon* in the Aru Islands) by many competing males; and in the case of many *Satyrinæ* which frequent open ground, and whose sexes have the same habits, the females are unquestionably much the scarcer.

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[1] I believe that Swainson, *Zool. Illustr.*, 1st Series (1821–22), was the first, in his notice of *Thecla* (*Deudorix*) *Galathea*, to record this curious habit. It is practised by every member of the Family that I have watched when settled, and it seems not improbable—looking to the brilliant eye-like metallic spot and (very often) adjacent tail or tails at the posterior angle of the hind-wings of these butterflies—that the movement may serve to accentuate these ornaments, either in rivalry or in menace.

[2] An instance of remarkably different port of the wings in temporary and in real repose was discovered by me in 1857, in the case of the well-known Hesperide *Thanaos Tages* of Europe. This butterfly holds its wings horizontally when settled temporarily, but I found two at rest in the evening with the wings deflected exactly as in a Bombycide or Noctuide Moth. This observation has recently been confirmed by Mr. Frohawk (see *Entomologist*, 1884, p. 49).

[3] See a full collection of evidence on this point in Darwin's *Descent of Man*, &c., vol. i p. 309.

With the exception of the *Danainæ*[1] and *Acræinæ*, butterflies in general do not exhibit a sociable or gregarious disposition. There are, however, extraordinary assemblages of *Pierinæ*, which, in South America especially, have been recorded by many observers, including Darwin, Wallace, Bates, and R. Spruce. The innumerable multitudes on the wing in some of these swarms may be imagined from Darwin's often-quoted account of his experience when in the "Beagle" off the South American coast. He writes (*Journ. Researches Nat. Hist.*, &c., new edit., 1870, p. 158): "Vast numbers of butterflies, in bands or flocks of countless myriads, extended as far as the eye could range. Even by the aid of a telescope it was not possible to see a space free from butterflies. . . . More species than one were present, but the main part belonged to a kind very similar to, but not identical with, the common English *Colias Edusa*." Mr. Bates, too, describes a flight of butterflies across the Amazon which lasted for two days without intermission during the hours of daylight; and in this case nearly all were species of *Callidryas*, swift-flying *Pierinæ* allied to *Colias*, and, as far as the observer could ascertain, the swarms consisted exclusively of males. Mr. Spruce (*Journ. Linn. Soc., Zool.*, ix. pp. 355–357), in a most interesting paper on these migrations, points out that in South America their direction is always to the south, and attributes them as mainly due to the exhaustion of the food supply in seasons when the insects concerned are by rains and other favouring circumstances produced in certain districts in unwonted abundance. Mr. Spruce mentions a swarm near Guayaquil consisting of both butterflies and moths; and in this case both sexes were concerned, as he noticed the females laying eggs, and saw the innumerable resulting larvæ destroy the shore vegetation, leaving none for the hordes that continued to arrive, and that thereupon "launched boldly out over the Pacific Ocean." As I have already put on record (*Trans. Ent. Soc. Lond.*, 1870, p. 383), Colonel Bowker witnessed, in March 1869, an immense flight of *Callidryas Florella*, "all steadily moving on eastward" across the Maluti Mountains in Basutoland: in this swarm both sexes were represented, the females being easily recognised by being mostly yellow instead of greenish-white. Colonel Bowker mentioned that he had seen similar gatherings both in the Cape Colony and in the Trans-Keian country.[1] As I suggested in the place cited, there is an evident connection or relation between these wonderful migrations of certain species of *Pierinæ* and the well-known habit of nearly all the members of the Sub-Family of flying straight onward in one direction. If it is the case that males only compose some of the migrating hosts, the wider distribution of the species concerned would not in such instances be promoted; but where both sexes are represented it cannot be doubted that these multitudinous invasions of fresh territory must considerably widen the area occupied by the species; and it seems probable that the world-wide prevalence of the *Pierinæ*, and the immense range of such genera as *Callidryas* and *Colias*, have been largely aided by both the ordinary and extraordinary travelling tendencies of these butterflies. It may be added that when (as seems not seldom to be the case) these vast flocks wing their way out to sea, although as a rule destruction must sooner or later overtake them all, yet occasional stragglers of such powerful flyers may occasionally reach oceanic islands, and possibly succeed in establishing their species there. It is true that the swifter and lighter males would be more likely to profit by any remote chance of reaching such a haven, but it is not impossible that a female may now and then succeed in doing so. A passing ship may sometimes aid in this dispersal of a species; for I have seen *Pyrameis Cardui*, the most widely-distributed species of butterfly known, fly on board a vessel ninety miles to the west of Teneriffe, and after a short rest start off westward again; and on another occasion, 195 miles west of Sierra Leone, I captured (among numerous other insects that flew on board the steamer "Norseman") ten specimens of butterflies belonging to the Sub-Family *Satyrinæ*.[2]

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[1] In Moore's *Lepidoptera of Ceylon*, i. pp. 1, 2 (1880), there is an interesting note by the late Dr. Thwaites on the "amazing numbers" of one or more species of *Euplœa* which appear on fine calm days, all flying together in the same direction. From the particulars mentioned, these Cingalese *Danainæ* swarms seem to behave very similarly to the flights of *Pierinæ* mentioned in the text.

6. *PROTECTIVE RESEMBLANCES AND MIMICRY.*

The prevalence in Nature of disguises protective to the wearers is matter of observation everywhere, and is particularly noticeable among the varied and multitudinous tribes of insects. In a world where competition is intense, where the relations between organic beings are of infinite complication, where it is the lot of the favoured few only to get enough to eat and to avoid being eaten, the advantages of escaping the notice alike of eager foes or wary prey are sufficiently obvious; and this is very materially aided by any strong resemblance to inorganic substances, to plants, to inoffensive animals in the case of prey, and to offensive ones in the case of enemies. Every one is familiar with cases of colour-likeness to general surroundings, such as those of desert animals to the desert sands, arctic animals to the white expanse of snow, arboreal animals to the green of foliage. Numerous more special resemblances to inanimate or vegetable objects are also matter of common observation, but those of one animal to another of different structure are comparatively rare, and are little known except to naturalists, although they are perhaps the most remarkable of all.

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[1] Mr. Barber in 1881 sent me a graphic account of the extraordinary abundance of this *Callidryas* during that season in Griqualand West. The caterpillars were observed in thousands on *Cassia arachnoïdes*, a very abundant plant there. They stripped it entirely of leaves, and then devoured the young shoots, and even the bark of the stems. In March and April the butterflies appeared in myriads; but in the height of their greatest abundance there came a week of cold and very wet weather, which reduced their numbers very considerably. This case is instructive, indicating how the migration in force of species of this genus is most probably occasioned by their having as larvæ exhausted the supply of their proper food-plant in a tract where circumstances had favoured their excessive multiplication.

[2] This was a remarkable case, for the butterflies in question were slow-flying shade-frequenting species of *Melanitis* and *Mycalesis*, which haunt dense woods and thickets, and avoid the open sunshine altogether. The wind on this occasion, though from the eastward, was not at all strong; the time was noon.

Butterflies and Moths are quite exceptionally defenceless; there is not a single instance in the whole Order of a species possessing either offensive weapons or defensive armour; nor does any one of them prey on other animals. While, therefore, they have no need of disguise to enable them to steal unobserved upon a watchful prey, they require more than any other equally large group of insects protection from enemies by concealment,[1] and it is not surprising to find all the three kinds of protective resemblances above mentioned strikingly developed among them. Without here considering the very numerous cases among Moths, it will be interesting to notice some of the more prominent instances in Butterflies.

It is the immense size of their wings that renders butterflies so conspicuous; their bodies are small even in the largest species, but the wings cover a considerable area, the smallest known *Lycæna* measuring half an inch in expanse. When to this broad field bright and strongly contrasted colours are, as often happens, added, the eye is at once arrested by so large and distinct an object. Although, when settled, the erect position of the wings in nearly all butterflies reduces the visible area by one-half, and although, when thoroughly at rest, this is still further lessened by the mode in which the fore-wings sink between the hind-wings, yet the exposed surface is of considerable size.[2] On the wing, the great swiftness of some species, and the exceedingly uncertain wavering motions of others, enable them to evade their enemies; but when at rest, it is obvious that their main refuge must be sought in concealment. It is found, accordingly, that the under side is protectively marked and coloured, being rendered inconspicuous by either its dulness or its resemblance to the immediately surrounding objects. As instances of this among South-African species, I may mention the universal *Pyrameis Cardui*, the beautiful *Junonia Cebrene* and *J. Clelia*, and several kinds of *Zeritis*, all of which have the under side very closely resembling the tints of the ground on which they are in the habit of settling.[1] *Melanitis Leda* and *M. diversa* rest habitually among dead leaves in shady spots, and their under side is so coloured and marked as to render it indistinguishable. The female *Eronia Leda* has a rather bright sulphur-yellow, red blotched under side, and it was only when I saw her settle on the half-withered leaves of the *Erythrina* that I even guessed how protective this under side was. Similarly, Mrs. Barber wrote to me how struck she was with the behaviour of the conspicuous male *Papilio Cenea,* which twice deliberately selected in her garden, as a resting-place during a shower of rain, a shrub whose pale yellow and brown seeds and flowers entirely agreed with the colouring of the under side of his wings. The shining white under side of *Iolaus Silas* is extremely conspicuous in the cabinet, but I was surprised to observe in Natal how it escaped notice, in the full noonday sunlight, among the highly polished glittering leaves of a shrub the butterfly frequented.

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[1] The known enemies of butterflies are birds, lizards, dragon-flies, hawk-flies (*Asilidæ*, &c.), *Mantidæ*, and spiders. The birds and dragon-flies seize them chiefly on the wing, the others pounce on them when settling or at rest.

[2] A good many *Erycinidæ* and *Hesperidæ* have the singular habit of settling on the *under side* of leaves with wings fully expanded, so that their own under side is not at all exposed, and the whole insect hidden from view from above.

By far the most elaborate disguise of this kind among butterflies is the famous one, first brought prominently to notice by Mr. Wallace, of the Indian and Malayan *Kallima Inachis* and *K. Paralekta.* In these species of *Nymphalinæ,* which on the upper side are deep blue and orange, the under side copies with perfect accuracy the withered or shrivelled leaves of certain dead trees or bushes, the imitation going into such exact details as to reproduce in appearance the minute fungi or moulds that grow on the leaves. But this is by no means all the extent of the representation, the shape of the wings when the insect is at rest not only agreeing generally with that of the leaf, but presenting both the elongated apex and the foot-stalk, and the attitude assumed both bringing into prominence those details and concealing such parts as the head and antennæ, which might impair the completeness of the deception. It is no wonder to find Mr. Wallace speaking of these large and swift butterflies "vanishing" when they settled among a cluster of the withered leaves.

It has been above observed that it is by either the swiftness or the irregularity of their flight that butterflies, so conspicuous on the wing, evade pursuers; but there are some remarkable exceptions to this rule. Throughout the tropical and sub-tropical regions there occur slow-flying, brightly or very distinctly coloured forms, rendered even more conspicuous by their lengthened bodies and wings, which seem to make no effort whatever to escape or to conceal themselves, but which, though usually very numerous in individuals (and sometimes numerous in species), and exposing themselves freely in haunts abounding with the enemies of butterflies, are evidently exempt, or almost so, from attack. These lucky exceptions to the common condition of being hunted down by hungry devourers are the *Danainæ* and *Acræinæ*, Sub-Families of *Nymphalidæ;*[1] and they owe their immunity to their being malodorous and unpalatable as food, and to their evidently being recognised as uneatable by insectivorous animals. It is most interesting to find these protected butterflies accompanied, wherever they are prevalent, by species of different Sub-Families or Families which closely, or even exactly, resemble them in form, colours, and markings, though quite diverse in structure. The first entomologist who carefully observed these "mimicries" in Nature, and arrived at a clear and reasonable explanation of their meaning and origin, was Mr. H. W. Bates, F.R.S., whose paper on the subject was read before the Linnean Society of London in 1861, and subsequently published in the *Transactions* (vol. xxiii.) of that body. Mr. Bates dealt with the very rich material yielded by the butterfly fauna of Tropical South America, and showed that while the models (protected species of *Danainæ*) were most abundant and presented the ordinary *facies* of their family, the mimickers were rare, and departed very widely from the appearance of their nearest allies; that the latter frequented the same spots as their models, often flying among them; and that the resemblance in life was so exact as constantly to deceive his own experienced sight. He observed that the very conspicuous and slow-flying *Danainæ* were not pursued by any of the ordinary enemies of insects to which they would have fallen an easy prey, and detected the reason for this security in the peculiar smell which they emitted, and thus indicated the obvious advantage it would be to butterflies not so defended to resemble *Danainæ* closely enough to be mistaken for them, and so passed over as uneatable. Demonstrating the identity in kind of these mimicries with the protective resemblances to inorganic and to vegetable forms so prevalent in Nature, he traced them similarly to the long-continued action of natural selection, the chief operating agents being insectivorous animals, which would continually destroy all those individuals of the mimicking species least resembling those which are exempt from persecution. Mr. Bates gave a list of no fewer than thirty-six cases of mimicry known to occur among Tropical-American butterflies, and in thirteen of these even the remote Moths (of the groups *Castniæ* and *Bombyces*) supplied instances of mimicry. In one of these cases, the Danaine *Methona Psidii* is imitated by two other *Danainæ* of the genus *Ituna*,[2] by the Pierine *Leptalis Orise*, and by two Moths; while four butterflies (of three different groups) and a Moth all copy the Danaine *Ithomia Flora.* The imitations of species of *Ithomia*, *Mechanitis*, and *Methona*, Danaine genera, by species of *Leptalis*, a genus of *Pierinæ*, are so surprisingly exact, that no one can wonder at their deceiving on the wing the most experienced collector.

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[1] *Junona Cebrene* has been observed by Colonel Bowker to be much hunted by a small lizard in the Trans-Kei country; and Mrs. Barber informs me that *Pyrameis Cardui* is a frequent victim among the butterflies with which the Sun-Birds (*Nectariniæ*) feed their young.

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[1] There are also some similarly protected species among the *Heliconinæ* and *Papilioninæ;* and these too have accurate imitators in other butterflies.

[2] These cases of apparent mimicry within the limits of the protected group itself present much difficulty. It might be supposed that the mimickers in these instances had for some reason failed to acquire the distastefulness of their kindred, but this has not yet been shown to be the case. Dr. Fritz Müller, Mr. Wallace, and Mr. Distant have discussed the question in *Kosmos* (1879-81) and in *Nature* (vol. xxvi.); and Mr. Meldola (*Annals and Mag. Nat. Hist.*, December 1882) has published an interesting summary of the discussion, in

Mr. Wallace, in 1864, called attention to the occurrence of a similar series of mimicries in India and the Malayan Archipelago, and expressed his full concurrence in Mr. Bates's view of the causes at work in the production of them. The list given in his paper (*Trans. Linn. Soc.*, xxv. p. 20) includes fifteen cases where species of *Papilio* mimic *Danainæ*, *Nymphalinæ* (one case), and other forms of their own genus.[1] The first of these may be noted as peculiarly interesting, seeing that the male and female of the mimicker, *Papilio paradoxa*, differ considerably, and that each imitates the corresponding sex of *Euplœa Midamus.* In seven of the fifteen cases given, only the female is mimetic; and Mr. Wallace suggested that the reason for this is probably that the slower flight of that sex when laden with eggs, and her exposure to attack while ovipositing, render a protective disguise specially necessary.[2]

It was most interesting to me to be able to supplement the cases brought forward by these distinguished explorers of South America and the Malayan Archipelago by a corresponding series of mimetic analogies among African butterflies. The cases in life known to me personally in South Africa were only four, but it so happens that one of them was the most remarkable ever recorded, viz., that of *Papilio Cenea.* I found, however, seven other very marked mimicries among the butterflies of Tropical Africa, and several additional instances (two of them in South Africa) have since then (1868) been discovered and placed on record. I was able to show[3] (1°) that the *Danainæ* and *Acræinæ* of Africa, like their allies elsewhere, were provided with offensive odours and secretions; (2°) that the butterflies mimicking them invariably occurred in the same districts, and in six cases (South African) in

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which, on the ground "that a certain number of individuals of distasteful species have to be sacrificed to the inexperience" of young insectivorous animals, he shows that "there would be a great gain in one distasteful species resembling another which exceeded it in numbers."

Mr. Bates (*loc. cit.*, p. 503) marks six of the imitating *Danainæ* as undoubtedly very much fewer in individuals than the species which they imitate; so that the fact of their being for some reason in need of protection seems established.

[1] Mr. Wallace observes (p. 21) that these imitated Papilios of the East belong to the group of *Papilio Polydorus* and *P. Coon*, and that, like the *Æneas* group of *Papilio* in South America, they are forest insects and have a low, weak flight. What their protection consists in has not been ascertained, but most probably it lies in their being unpalatable as food.

[2] A most striking case of this kind is that recorded by Mr. Wallace (*Trans. Ent. Soc. Lond.*, 1869, p. 287). *Diadema anomala*, a Nymphaline of the Malay Archipelago, has the male plainly tinted with bronzy or olive brown, only a blue gloss appearing on the margins of the fore-wings; while the female is rich purple-brown, with two-thirds of the fore-wings richly glossed with satiny blue, so as to closely imitate *Euplœa Midamus*, a protected Danaine, "one of the very commonest butterflies of the East."

[3] *Trans. Linn. Soc. Lond.*, xxvi. p. 497, &c.

the very same localities; (3°) that in eight cases the mimickers were known to be very much scarcer than the species which they copy; (4°) that in five cases where the *Danais* or *Acræa* presents local forms or merely slight varieties, even these were mimicked by individuals of the imitating species; (5°) that in three cases where the sexes of the insect mimicked differed strikingly from each other, the sexes of the mimicker presented corresponding differences; and (6°) that in four cases observed by me in life it was next to impossible to distinguish the mimicker from the species which it mimicked. It must be remembered that these extraordinary likenesses are not those of general colouring and pattern alone, but include outline and form, and extend to minute reproduction of prominent markings, however small; and that the deception is often further ensured by following closely the kind of flight and mode of resting proper to the species copied.

The following table exhibits the known cases of mimicry among Extra-Tropical South-African Butterflies:—

Protected Forms that are Mimicked.	Mimicking Forms.'	
FAMILY.—NYMPHALIDÆ. Sub-Family.—DANAINÆ. Genus.—*Amauris.*	FAMILY.—NYMPHALIDÆ. Sub-Family.—NYMPHALINÆ. Genus.—*Euralia.*	FAMILY.—PAPILIONIDÆ. Sub-Family.—PAPILIONINÆ. Genus.—*Papilio.*
1. *Amauris Ochlea* (Boisd.)	1. *Euralia deceptor* (Trim.)	
2. *Amauris Echeria* (Stoll.)		2. *Papilio Cenea*, Stoll. ♀. (Form 1. *P. Cenea*, Stoll, typ.) *Papilio Echerioides*, Trim. ♀. (Small yellow-spotted variation.)
2a. *Amauris Echeria* (Stoll.) (Variety *A. albimaculata*, Butl.)	2a. *Euralia mima* (Trim.) Genus.—*Pseudacræa.* 2a. *Pseudacræa Tarquinia* (Trim.) ♀	2a. *Papilio Cenea*, Stoll. (Variation of Form 1. *P. Cenea*, Stoll.) *Papilio Echerioides*, Trim. ♀. *Papilio Brasidas*, Feld.
	Genus.—*Euralia.*	
3. *Amauris dominicanus* Trim.	3. *Euralia Wahlbergi*, Wallengr.	3. *Papilio Cenea*, Stoll. ♀. (Form 2. Near *P. Hippocoon*, Fab.)
Genus.—*Danais.*	Genus.—*Diadema.*	
4. *Danais Chrysippus* (Linn.)	4. *Diadema Misippus* (Linn.) ♀.	4. *Papilio Cenea*, Stoll. ♀. (Form 3. *P. Trophonius*, Westw.)
4a. *Danais Chrysippus* (Linn.) (Variety *D. Dorippus*, Klug.)	4a. *Diadema Misippus* (Linn.) ♀. (Variety *D. Inaria* (Cram.)	4a. *Papilio Cenea*, Stoll. ♀. (Variation of Form 3. *P. Trophonius*, Westw.)
Sub-Family.—ACRÆINÆ. Genus.—*Acræa.*	Genus.—*Pseudacræa.*	
5. *Acræa Acara*, Hewits. ♂ and ♀.	5. *Pseudacræa Trimenii*, Butl. ♂ and ♀.	
Genus.—*Planema.*		
6. *Planema Aganice*, Hewits. ♂ and ♀.	6. *Pseudacræa imitator*, Trim. ♂ and ♀. [*Pseudacræa Tarquinia*] (Trim.) ♂.	

Among the species tabulated, probably the second, *Amauris Echeria*, a Danaine of wide distribution in wooded localities, is the best protected butterfly in South Africa, judging from the number of its imitators. The most accurate copyist is the female *Papilio Cenea* (type), and the smaller specimens of this *Papilio* cannot in the field be distinguished from the *Amauris*. It is the variety of *A. Echeria*, with all the spots of the fore-wing white, which prevails in Kafirland and Natal, that finds most imitators, being very closely copied, not only by a slight (white-spotted) variation of *Papilio Cenea*, but also by the female of *Papilio Echerioides*, by individuals of both sexes of *Papilio Brasidas*, by both sexes of the Nymphaline *Euralia mima*, and by the female of *Pseudacræa Tarquinia*. Though the females of *Papilio Cenea* and *P. Echerioides* are so much alike in their imitation of *A. Echeria* as to be indistinguishable on the wing, the males of these species of *Papilio* are utterly dissimilar both from their respective mates and from each other.[1]

The case of *Papilio Cenea* presents certainly the most remarkable mimetic analogy yet recorded among butterflies. The male of this species (the Southern representative of *P. Merope*, Cram., of Western Africa) is a very fine conspicuous insect, and has a peculiar colouring of very pale creamy-yellow, with a broad black border to the fore-wings, and a black band across the disk of the hind-wings,—the latter wings bearing each a long broad process or "tail," while the female exhibits three quite different forms (all with the hind-wings untailed), each of which is entirely unlike the male, but imitates with more or less exactness one of three prevalent species of South-African *Danainæ*.[2] It is observable, too, that numerous intermediate variations of the females exist, showing a series of links between the three prominent forms, and serving to indicate how plastic for further development the polymorphic female *Cenea* remains.

Other circumstances which add to the great interest of the case are (1.) that the very closely allied *Papilio Merope* of Western Africa also has a polymorphic female, several forms of which have been described as distinct species, and are imitative of *Danainæ* inhabiting the same region; and (2) that in Madagascar the likewise nearly related *Papilio Meriones*, Feld., has but one form of female, and that form only slightly differing from the male. Even more surprising is it to find, as I learn from Mr. Ch. Oberthür, that the representative of *P. Merope* at

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[1] The nearest alloy of *P. Echerioides* is the West-African *P. Cynorta*, Fab. Curiously enough, while the males are very much alike, it is here the females that are totally dissimilar; for while the female *Echerioides* mimics an *Amauris*, the female *Cynorta* (= *P. Boisduvallianus*, Westm.) exactly copies the female *Acræa Gea*, Fab., a butterfly of quite different pattern.

[3] The varying females of the mimicking species of Indian and Malayan *Papiliones*, described by Mr. Wallace (*loc. cit.*), appear in no case directly to copy more than one protected species. But in the remarkable cases of *Papilio Memnon* and *P. Androgeus*, the extreme mimicking form of the female (= *Achates*, Cram.) has the hind-wings tailed in imitation of the protected model, although the male and less modified females of her own species are quite tailless.

Lake Tsana in Abyssinia also has the sexes nearly alike. The inference is obvious that the females in Madagascar and Abyssinia for some reason do not stand in need of the protective disguises so elaborately worked out for them in Southern and Western Africa. Probably some active persecutors of this large pale type of *Papilio* are absent in those countries, or may there have found some easier or more attractive insect prey. In South Africa the handsome fly-catcher *Tchitrea cristata* has been seen by Mr. Mansel Weale to capture the male *P. Cenea*, and he had reason to suspect a bird of an allied family and quite similar habits, *Dicrurus musicus*, to be another of this butterfly's enemies. Insectivorous birds of both these genera are found in Abyssinia—the very same species of *Dicrurus* is, I believe, a native of that country—and also in Madagascar, but it is possible that circumstances may have led to their leaving *Papilio Merope* and *P. Meriones* unmolested.

In considering these cases of mimicry, a difficulty naturally arises in perceiving how the initial stages of them could have been of service to the mimickers. Taking, for instance, this very case of *Papilio Cenea* and its allies, it may be asked of what possible advantage to a large pale-yellow female such as the present *P. Meriones* would be the merest beginning of darker colouring or of shorter tails on the hind-wings, seeing that no enemy could for a moment be led to mistake a specimen so very little modified for the unpalatable *Danais* or *Amauris?* Mr. Darwin has undoubtedly elucidated this point by remarking (*Descent of Man*, i. p. 412) that "this process"—the development of mimicry—"probably has never commenced with forms widely dissimilar in colour. But with two species moderately like each other, the closest resemblance, if beneficial to either form, could readily be thus gained; and if the imitated form was subsequently and gradually modified through sexual selection or any other means, the imitating form would be led along by the same track, and thus be modified to almost any extent, so that it might ultimately assume an appearance or colouring wholly unlike that of the other members of the group to which it belonged." And Mr. Wallace has further argued with much reason (*Tropical Nature*, &c., 1878, p. 190), that there is no ground for supposing that, when the first steps towards mimicry occurred, the *Danainæ* were what they are now; on the contrary, the considerable proportion still among them of species of what may be termed ordinary butterfly colouring seems to indicate that, at the period when they began to acquire those distasteful secretions which protect them, their appearance and flight may not have been nearly so peculiar as at present, but may have much more resembled those of the unprotected families. At the same time, as they became more unpalatable to enemies, it cannot be doubted that any peculiarity about them would be preserved and emphasised by those enemies avoiding the most distinguishable of them, and it is probably thus that their bodies and wings began to be elongated and their flight characteristically weakened. "It would be at this stage," writes Mr. Wallace, "that some of the weaker-flying Pieridæ, which happened to resemble some of the Danaidæ around them in their yellow and dusky tints and in the general outline of their wings, would be sometimes mistaken for them by the common enemy, and would thus gain an advantage in the struggle for existence. Admitting this one step to be made, and all the rest must inevitably follow from simple variation and survival of the fittest."

7. *South-African Butterflies.*

As has been remarked above, the Extra-Tropical South-African Sub-Region possesses representatives of all the African or Ethiopian Families and Sub-Families except the *Nemeobiinæ*, a Sub-Family of *Erycinidæ;* but the representation of this Sub-Family in the Region is exceedingly poor, only four species of one genus (*Abisara*) being recorded. The Butterflies known to occur in the Sub-Region and those peculiar to it are numerically as follows, viz.:—

	Inhabiting South Africa.	Peculiar to South Africa.
Families	5	None
Sub-Families	7	None
Genera	69	6
Species	380	195

Though the proportion of peculiar genera is thus little more than one-twelfth of the entire number represented, it should be noted that no fewer than twenty-one other genera—making twenty-seven in all, or rather over two-fifths—are confined to the African Region. Similarly, while but slightly above half the species appear to be endemic, yet only thirteen,[1] or about one-twenty-ninth, are known to extend beyond the Region.

The genera which are not known to extend into Tropical Africa are the following, viz., two in the Family *Nymphalidæ* (Sub-Family *Satyrinæ*),—*Meneris* (one species) and *Cænyra* (one species); and four in the Family *Lycænidæ*,—*Capys* (one species), *Arrugia* (three species), *D'Urbania* (three species), and *Deloneura* (one species).

There are seventeen Tropical-African genera besides *Abisara*, of which no South-African representatives are known, viz., (*Satyrinæ*) *Bicyclus*, *Heteropsis;* (*Nymphalinæ*) *Iæra*, *Elymnias*, *Discophora*, *Doleschallia*, *Ergolis*, *Enotrea*, *Cyrestis*, *Aterica*, and *Philognoma;*[2] (*Lycænidæ*) *Phytala*, *Epitola*, *Miletus*, and *Hewitsonia;* and (*Hesperidæ*) *Ceratrichia* and *Carystus*. The rich Tropical genera *Euryphene*, *Euphædra*, and *Harma* (all *Nymphalinæ*) are each represented by a single species only.

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[1] These are *Danais Chrysippus, Atella Phalantha, Pyrameis Cardui, Hypanis Ilithyia, Diadema Misippus, Melanitis Leda, Ypthima Asterope, Lycæna Bœtica, L. Lysimon, L. Trochilus, Terias Hecabe, Pieris Mesentina,* and *Teracolus Eris.*

[2] *Varanes*, Cram., seems properly referable to *Charaxes.*

The following table exhibits, as far as known to me, the total representation of the Rhopalocera in Extra-Tropical Southern Africa, and the proportion borne to it by the genera and species which appear to be peculiar to the Sub-Region:—

SOUTH-AFRICAN RHOPALOCERA.

Families and Sub-Families.	Total Representation in South Africa.		Genera and Species peculiar to South Africa.	
	Genera.	Species.	Genera.	Species.
NYMPHALIDÆ—				
Danainæ	2	4	...	...
Satyrinæ	9	29	2	21
Acræinæ	4	24	...	6
Nymphalinæ	20	61	...	20
	— 35	— 118	— 2	— 47
ERYCINIDÆ—				
Libythæinæ	1	1	...	...
	— 1	— 1	— ...	— ...
LYCÆNIDÆ	15	116	4	75
PAPILIONIDÆ—				
Pierinæ	8	69	...	28
Papilioninæ	1	15	...	7
	— 9	— 84	— ...	— 35
HESPERIDÆ	9	61	...	38
	69	380	6	195

Omitting the solitary representative of the *Erycinidæ*, it will be seen that the several Families almost follow their scientific order as regards their respective numbers of genera and species, the *Nymphalidæ* leading with 35 genera and 118 species; *Lycænidæ* following with much fewer (15) genera, but with an almost equal number (116) of species; and the *Papilionidæ* and *Hesperidæ* succeeding, with the same number of genera (9), but with 84 and 61 species respectively.

The genera most richly represented are two of the Family *Lycænidæ*, viz., *Lycæna* (46 species) and *Zeritis* (28 species), and one of the Family *Papilionidæ*, viz., *Teracolus* (37 species). The next most numerous genus is the Nymphalide one of *Acræa*, which has 20 South-African species.

As regards endemic forms, the genera richest in them—apart from the six genera above mentioned as themselves peculiar to South Africa—are exactly those which have just been indicated as the most fully represented in the country, viz., *Lycæna* with 29, *Zeritis* with 23, and *Teracolus* with 22 species, which have hitherto not been recorded as occurring out of the Sub-Region. As regards *genera*, the *Lycænidæ* exhibit, both absolutely and relatively, the greater peculiarity, more than one-fourth (4 out of 15) being peculiar, while the *Satyrinæ* have less than one-fourth (2 out of 9); but in *species* the latter show a much larger proportion of peculiar forms, nearly three-fourths (21 out of 29) being known only from the Sub-Region, while among the *Lycænidæ* rather less than two-thirds (75 out of 116) are peculiar.

There can be no doubt that, with the exception of the eastern coast-belt, from about the Kei River to Delagoa Bay and Inhambane, Southern Africa is very scantily supplied with butterflies. Here and there some more productive spots, such as a river-bank, a flowery hummock or "kopje," or a patch of dense scrub in a ravine, will occur; but taking the great area generally, notwithstanding its temperate climate and its wealth in many parts of flowering plants, butterflies are certainly rare, both in species and in individuals. The country is, indeed, too bare and dry, and too little wooded, to afford the conditions of food and shelter most favourable to butterfly life; and it is only near the coast of Kafirland, Natal, Zululand, and farther northward, where the warm Indian Ocean current appears to produce conditions quite tropical in character, that there is anything striking either in the aspect or abundance of the Rhopalocera. So accustomed are we to associate butterflies with flowers, that I well remember how much the dearth of those insects surprised and disappointed me when first I contrasted it with the unrivalled variety and beauty of the flora of the Cape district.[1] A residence of nearly twenty-five years (with the exception of five intervals of from four to thirteen months on leave of absence) at Cape Town, during which a great part of my leisure has been devoted to the subject, enables me to state with some certainty that the species inhabiting the neighbourhood, including the entire peninsula and a radius of twelve miles at least to the northward and eastward, do not number more than forty-seven. This remarkable poverty of butterflies is rendered the more striking from the circumstance that twenty-nine of the species are small *Lycænidæ* (22) and *Hesperidæ* (7), and that the bulk of the remainder consists of sombre *Satyrinæ* (10) of medium size. The *Acræinæ* are represented by *Acræa Horta* only, and the *Nymphalinæ* by none but the ubiquitous *Pyrameis Cardui;* and the only other species at all conspicuous from either size or colouring are *Danais Chrysippus* (not common), *Meneris Tulbaghia*, *Capys Alphæus* (very local), *Pieris Hellica* (the solitary representative of its genus), *Colias Electra*, and *Papilio Demoleus.* Six stragglers occasionally make their appearance in the summer and autumn months, viz., *Junonia Cebrene*, *Diadema Misippus, Pieris Mesentina*, *Eronia capensis*, *Callidryas Florella*, and a species of *Teracolus;* but all are found only rarely and singly, and of the last named

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[1] I believe that when the Cape flora comes under investigation as regards fertilisation by insect agency, it will be found that a great proportion of its large and brilliant blossoms are adapted for the visits of *Diptera*, and a good part of the remainder for those of *Hymenoptera.* The great number of densely hairy flower-frequenting *Coleoptera* in South Africa must also play a large part in plant fertilisation.

I have seen but one example on one occasion. The long isolation of the present Cape peninsula from the mainland by a wide arm of the sea between the existing False and Table Bays, where the sandy "Flats" now extend, is the probable explanation of much of this poverty of butterfly life; but the violent winds that sweep the whole tract render it a highly unfavourable station; and it must also be remembered that, as far as is known, the entire western and north-western districts of the Colony are but little more productive in the Rhopalocera. The "karoo" tracts universally, but especially the more northern and elevated ones beyond the second mountain range traversing the Cape Colony from west to east, are apparently exceedingly poor in butterflies, though possessing some peculiar forms of *Satyrinæ* and *Lycænidæ*.

It is only when we progress eastward along the belt between the first mountain range and the sea-coast, that the Rhopalocerous fauna finds conditions more and more favourable for its development. Thus, at Knysna, where extensive forests of large trees clothe a large area, I collected, during nine months' residence, sixty-two species; and I have no doubt that a more prolonged investigation of the district generally would yield several others. Considerably farther eastward, the Albany district (especially the neighbourhood of Grahamstown, where Mrs. Barber and other good collectors have resided) has produced eighty-three species; and, from the little that has been done at Port Alfred, at the mouth of the Kowie River, I anticipate that this number will be considerably increased when that part is attended to by a resident collector. British Kaffraria (chiefly the vicinity of King William's Town) yielded ninety-four species to the researches of Mr. W. S. M. D'Urban many years ago, and the rich district of East London, when properly worked, will undoubtedly add largely to the local list. Across the Kei River, in the wooded valley of the Bashee, Colonel Bowker collected 117 species, and added several others from the Tsomo (the principal tributary of the Kei) and other parts of the territory. From the Bashee River northward, little is on record respecting the native butterflies until reaching D'Urban, on the coast of Natal, where the augmentation of their ranks is most remarkable. At this spot, the Rhopalocera become a constant and beautiful feature of the scenery, and, from their size, abundance, and beauty, cannot be overlooked by the most casual observer. I was so much struck with their prevalence, that, on several days during the summer of 1867, I made a careful register of all the kinds met with. The most productive day was the 4th February, when, in a radius of certainly not more than three miles from the town, I captured or determined with certainty no less than *fifty-four* species,[1] and believe that several examples which I noticed without being able to reach or identify them belonged to species not included in that number. On the coast of Natal, as far as the Tugela, I took in a period of ten weeks 134 species; and 206 are now known to me as certainly inhabiting the tract.

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[1] One more species than the vicinity of Cape Town has yielded to careful research by many collectors, and by myself for twenty-five years, even including the six occasional stragglers named in the text. Such a "bag" in a single day's collecting compares well even with Mr. Wallace's experience (mentioned above) of the rich Malayan Islands.

At Delagoa Bay—the richness of whose butterfly fauna has only of recent years been made known by the late Mr. J. J. Monteiro and by Mrs. Monteiro—not only do the characteristic forms of the Natal coast prevail, but there are numerous very fine additions, for the most part belonging to the Tropical East-African series. Such are the glassy *Acræa Rabbaiæ*, the conspicuous green and yellow *Euphædra Neophron*, the remarkable *Godartia Wakefieldii*, *Charaxes Castor*, *Papilio Colonna*, &c., which do not appear to occur in Natal; while the lovely *Crenis Rosa* seems only to have been met with elsewhere at the Victoria Nyanza, and *Pseudacræa Delagoæ*, *Charaxes Phœus*, *Deudorix Dariaves*, *Pamphila producta*, &c., are peculiar to the district. Swaziland and the Lydenburg district of the Transvaal have been respectively the scene of considerable collections by the late Mr. E. C. Buxton and by Mr. T. Ayres; they are evidently rich in butterflies, but have not hitherto yielded the striking forms just mentioned as characteristic of the not far distant Delagoa Bay.

As regards the high-lying interior country, there can be little doubt that it is very poor. In Basutoland, Colonel Bowker's assiduous researches for more than two years produced only sixty-two kinds. I have no record of the Orange Free State butterflies, but Dr. H. Exton, a good observer, informs me that they are few and inconspicuous, and the ten or twelve species I have seen are the same as some of those inhabiting Basutoland. Griqualand West seems almost equally poor, except along the course of the Vaal River, where Colonel Bowker and Mrs. Barber found a good many rather striking forms. The elevated Transvaal tracts must be richer, judging from Mr. T. Ayres' collection, received in 1879, which contained seventy-nine species from the south-western district of Potchefstroom. The few Bechuanaland butterflies that I have examined were taken at Motito, many years ago, by the late Rev. J. Frédoux; they were identical with species occurring in Griqualand West. The great adjacent territory, styled the Kalahari "Desert," has not to my knowledge had any of its Rhopalocera brought to scientific notice; and the conterminous wide tracts between it and the Atlantic, collectively named Great Namaqualand, are all but equally unknown; Mr. W. C. Palgrave being the only traveller of my acquaintance who noticed the butterflies among other insects there, and brought me six or seven kinds, reporting that in the barren country he traversed they were very scarce.

FAMILY I.—NYMPHALIDÆ.

Nymphalidæ, Swainson, "Phil. Mag., Ser. II. vol. i. p. 187; March, 1827."

Suspensi (excl. *Libythides*), Boisd., Sp. Gen. Lep., i. pp. 162 and 164 (1836).

Nymphalidæ and *Satyridæ*, Swains., Hist. and Nat. Arrangem. Ins., pp. 90 and 93 (1840).

Heliconiidæ and *Nymphalidæ*, Westw., Intr. Mod. Class. Ins., ii. pp. 347 (1840).

Danaidæ, *Ageronidæ*, *Heliconidæ*, *Acræidæ*, *Nymphalidæ*, *Morphidæ*, *Brassolidæ*, *Satyridæ*, and *Eurytelidæ*, Doubl. and Westw., Gen. Diurn. Lep (1846–52).

Nymphalidæ, Bates, Journ. Ent., 1861, p. 220; 1864, p. 176.

IMAGO.—First pair of legs in both sexes much smaller and more slender than the others, and too short to be used in walking or clinging: in the male usually much more reduced than in the female, and with the tarsus devoid of terminal claws, not jointed, or even (rarely) wanting altogether; in the female with the tarsus five-jointed (the fifth joint sometimes scarcely perceptible), but without terminal claws.

LARVA.—Cylindrical: often set with spines generally; or somewhat rugose, with spines on the head; or tomentose, with the tail bifid; or smooth, with a few pairs of flexible tentacles.

PUPA.—Suspended vertically by the tail only.

Throughout this great Family, which embraces six Sub-Families, 223 genera, and more than 4000 known species, amid very great diversity of structure generally, one distinctive character only, viz., the greater or less atrophy of the fore-legs in both sexes, prevails without exception. Functionally impotent in every member of the group, these limbs are most reduced in the Sub-Families *Danainæ* and *Satyrinæ*, the extreme in the former being reached in the South-American genus *Sais*—the male of which, as Doubleday records,[1] has the fore-legs only about one-sixteenth of the length of the middle and hind-legs—and in the latter in the South-American genus *Lymanopoda* and the Old-World genus *Ypthima*.[2] In two of the cases referred to, besides the very small size of the fore-legs, both tibia and tarsus are aborted, being represented by a small knob, and in *Ypthima* even the femur is merged in the small appendage which alone represents the limb beyond the coxa. The same legs in the female are in these genera far more complete, but still very small, and in many of the *Satyrinæ* they are but little more developed than in the male.

As indicated in the tabular view of the Sub-Order Rhopalocera given above, a characteristic point in the neuration of the wings in this Family is the presence or absence of the lower disco-cellular nervule in the hind-wings, according to which the discoidal cell is closed or open. This nervule is well developed throughout all the Sub-Families except the *Nymphalinæ*, in which the majority of the genera has the cell quite open, though in many others the closing nervule is distinctly or feebly exhibited.

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[1] *Gen. Diurn. Lep.*, i. p. 132.

[2] A species of this genus, *Y. Asterope*, Klug, is a widely distributed native of South Africa.

Three of the six Sub-Families, viz., the *Danainæ*, *Acræinæ*, and *Heliconinæ*, are readily distinguished from the rest by their elongated body and wings. In the Heliconide *Danainæ* of South America and in the *Heliconinæ* of the same region, which possess this elongation in its greatest development, the antennæ are also, in general, very long. The *Danainæ* present an apparently constant distinction in the internal nervure of the fore-wings, which is very slender and short, and, instead of having a free course to the inner margin, as in the *Papilioninæ*, ends by anastomosing with the immediately superior submedian nervure.[1] The *Acræinæ* differ from the *Heliconinæ* in their much narrower head, thicker palpi, shorter and more abruptly clavate antennæ, shorter wings, and usually much longer discoidal cell of the hind-wings. All these three Sub-Families are also characterised by the small development of the thorax, which is much shorter and narrower than in the *Nymphalinæ* and *Brassolinæ*—in this respect resembling that of the *Satyrinæ.*

The *Brassolinæ*, which are confined to South America, are singular among the *Nymphalidæ* in possessing in the hind-wings a small prediscoidal cell, formed (as in the *Papilioninæ*) by the junction of the lower branch of the precostal with the costal nervure. The principal differences between the *Nymphalinæ* and *Satyrinæ* are that the former have generally a more robust structure, especially as regards the size of the thorax and the thickness and rigidity of the wings; their palpi are more porrect, and clothed with scales more than with hairs; the fore-legs of the male are better developed; and the discoidal cell of the hind-wings is usually open or but imperfectly closed.

When we turn to the *Larvæ* and *Pupæ* of the several Sub-Families, we do not find that the differences among them are such as to make the divisions founded upon them correspond closely with the groups formed from the characters of the perfect insects, but there is nevertheless very considerable agreement between the two arrangements. Thus the *Danainæ* larvæ differ from all the rest in having the skin smooth, with simply a few pairs of thread-like tentacles or two rows of small tubercles; while the pupæ are very round, short, and smooth, with a blunt head. The *Satyrinæ* larvæ are attenuated towards the hinder extremity, which is usually bifid or forked, and their skin is set with a stiff sparse clothing of extremely short hairs; their head is usually rounded, but sometimes more or less cleft superiorly, and occasionally furnished with a pair of spines or horns. The pupæ are more elongate than those of the *Danainæ*, but still thick and rounded, only a few of them exhibiting any approach to angular prominences. In these characters, however, the earlier states of the *Satyrinæ* very much resemble not only those of the *Brassolinæ*, but also those of the large and important portion of the *Nymphalinæ* represented by the genera *Apatura*, *Charaxes*, &c. The rest of the *Nymphalinæ* agree with the *Heliconinæ* and *Acræinæ* in the larvæ being thickly set with branched or bristled spines, but only a portion of the first-named group have the head armed with spines as well as the rest of the body. The pupæ are elongated in both *Heliconinæ* and *Acræinæ;* they appear to be almost without angles in the former, and are only bluntly angulated in the latter; but those of the *Nymphalinæ* with spinose larvæ are much thicker, more curved abdominally, and prominently angulated, with the head strongly bifid.

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[1] The same arrangement of the internal nervure recurs in some of the more robust genera of *Pierinæ*, such as *Hebomoia*, *Eronia*, *Callidryas*, &c.

The Family Nymphalidæ is better represented in South Africa than any other, thirty-five genera being recorded, comprising 118 known species. The Sub-Family *Nymphalinæ* is by far the richest, including five more genera (20) and four more species (61) than those of the three other Sub-Families combined. The *Satyrinæ* follow with nine genera and twenty-nine species, and after them the *Acræinæ* with four genera and twenty-four species, while the *Danainæ* present only two genera and four species. With respect to the last, it should be remarked that their very small number does but reflect the poverty with which the *Danainæ* are represented in Africa generally, only fourteen species belonging to three genera being known from the whole Ethiopian Region. This paucity of forms is the more singular because these African *Danainæ* are unquestionably protected species, and no less than nine of the fourteen are known to be the direct objects of mimicry by butterflies of other groups. Even more striking, however, is the scarcity of the *Acræinæ* to the eastward of Africa, only three species being known from the entire Oriental Region, and only two from the Australian Region; but not one of these five species is, so far as I am aware, the object of mimicry, whereas numerous cases of this occur among the African, and some among the American *Acræinæ*.

SUB-FAMILY I.—DANAINÆ.

Danaides and *Heliconides* (part), Boisd., Sp. Gen. Lep., i. p. 165 (1836).
Danaidæ and *Heliconidæ* (part), Doubl. and Westw., Gen. Diurn. Lep., i. pp. 84, 96 (1847).
Danainæ, Bates, Journ. Ent., 1861, p. 220; 1864, p. 176.

IMAGO.—*Head* of moderate size, or rather small; *eyes* oval, prominent, naked; *palpi* slender, short, divergent, rising but little above forehead, clothed with scales and beneath also with hairs—terminal joint very small and short; *antennæ* rather thick, very gradually clavate, rather short, or of moderate length in the Old-World genera, but long or very long in the South-American genera. *Thorax* rather short and narrow. *Fore-wings* elongate, and usually produced in apical portion: discoidal cell always elongate, closed; upper radial nervule united to, and often apparently continuous of, subcostal nervule—the 1st discocellular nervule being obsolete; lower radial in several New-World genera penetrating discoidal cell; subcostal nervure 5-branched—the 1st nervule branching off at some distance before the extremity of the discoidal cell, and sometimes anastomosing with the costal nervure; internal nervure very slender and short, uniting with submedian nervure at a little distance from base. *Hind-wings* large, obovate, more elongate in the New-World genera; discoidal cell usually rather elongate, closed; costal nervure short, sometimes joined to subcostal nervure for a little distance from base; radial nervule usually appearing more associated with the subcostal than with the median nervure, and in several New-World genera penetrating discoidal cell; internal nervure well developed and terminating at, or a little before, anal angle; inner margin convex near its origin, but not channelled completely so as to receive abdomen. *Middle and hind legs* rather long and thick; tibiæ spiny, with terminal spurs of moderate size. *Fore-legs* very small and short; the tarsi in the male reduced to one joint (or rarely two), in the female usually to four joints, and without any claws.

Abdomen elongate, slender, but usually thickened towards extremity; very long in the South-American genera.

LARVA.—Moderately stout, smooth, somewhat attenuated towards the head, with two or more pairs of long fleshy dorsal filaments, or with two rows of small tubercles.

PUPA.—Short, stout, rounded, smooth; somewhat constricted at junction of thorax and abdomen. Often wholly golden, or with golden spots and lines.

The Butterflies of this Sub-Family are well characterised by their long abdomen and fore-wings, very gradual clavation (in the genus *Hestia* all but obsolete) of the antennæ, very small palpi, and slender internal nervure anastomosing with the submedian nervure of the fore-wings. As mentioned above in the notes on the Family *Nymphalidæ*, the atrophy of the fore-legs attains an extreme degree in the males of some of the New-World genera, tibia and tarsus together being represented by a single small thick joint; but it is also very well marked in those of the Old World; and it is to be noted that the same limbs in the *female* are often better developed and with more distinct tarsal articulations among those South-American genera whose males exhibit the extreme atrophy mentioned, than in the case of other (especially Old-World) genera, where the male fore-legs are not so greatly reduced. The males of many species of *Danais* and *Euplœa* present conspicuous secondary sexual characters in the form of small vesicular sacs, or of smooth differently-scaled streaks or patches on the wings; and several of the latter genus have the inner margin of the fore-wings greatly expanded convexly, so as to cover a considerable space of the hind-wings, and the two opposed surfaces are smooth and glistening, and coated with scales of different form from those clothing the wings generally. I believe that the peculiar tufted organs protruded from the extremity of the abdomen by many species of these two genera, as well as of *Amauris*, *Lycorea*, and *Ituna*, are also peculiar to the male.

The South-American (Heliconioid) forms of *Danainæ* are more specialised, and depart farther in structure and appearance from the other groups of *Nymphalidæ* and of butterflies generally, than the Old-World forms. In such genera as *Mechanitis* and *Melinæa*, the elongation of antennæ, wings, and abdomen is extraordinary; and it is scarcely less in *Methona*, *Athesis*, and *Ithomia*, which are rendered of even more remarkable aspect by the great (in many *Ithomiæ* almost entire) transparency of their wings. The neuration of their hind-wings exhibits many peculiarities, particularly that of the crowding together of the costal and subcostal nervures (with the branches of the latter) close to the costa; and in a good many cases the arrangement of the disco-cellular and radial nervules differs considerably in the sexes of the same species.

The maximum of size in the Sub-Family is attained by the species of the very remarkable Oriental and Austro-Malayan genus *Hestia*—semi-transparent white or greyish butterflies, strongly veined and spotted with black—some of which expand over six inches across the fore-wings. Many of the *Euplœæ* from the same region are also of large size, and nearly all the species of *Danais* are butterflies of considerable stature.

Conspicuous rather than brilliant colouring prevails throughout the group, the bands and spots being usually in strong contrast to the ground-colour; but many of the *Euplœæ* have a splendid purple-blue gloss over their dark-brown white-spotted wings. There are few, if any, instances of marked disparity in the colouring of the sexes. The head and thorax throughout the Old-World forms, and in many of those characteristic of the Neo-Tropical Region, are spotted with white.

Africa, as stated above, is singularly poor in *Danainæ*. The great Eastern genus *Euplœa* only reaches the edge of the region in two species inhabiting the Mascarene Islands and Madagascar. One of these, *E. Goudotii*, Boisd., was recorded as having occurred in Zululand, a specimen ticketed with that locality having been presented to the British Museum by Dr. (afterwards Sir) Andrew Smith; but no South-African example has since been met with, and it is almost certain that the habitat assigned to Dr. Smith's specimen was a mistaken one.

The genus *Danais*, also numerously represented in the Oriental Region, has but two species known to inhabit the African continent, viz., the very widely-spread *D. Chrysippus* (Linn.) and a variety of *D. Limniace* (Cram.) The ten remaining Ethiopian *Danainœ* belong to the endemic genus *Amauris*, very closely allied to *Danais*.

South Africa possesses only four known species of the Sub-Family, viz., *Danais Chrysippus*, and three species of *Amauris*, two of which inhabit also South Tropical Africa, while the third, *A. Echeria* (Stoll), has occurred north of the equator at Fernando Po. All these four species are the direct objects of the remarkable mimicry by butterflies of other groups which has been mentioned above, and the known cases of which in South Africa are tabulated at p. 37.

The plants eaten by the *Danainœ* larvæ mainly belong to the Orders *Asclepiadaceœ* and *Apocynaceœ;* but according to a note by Dr. Thwaites (Moore's *Lepid. of Ceylon*, i. p. 2), some of them in Ceylon feed also on species of fig.

GENUS DANAIS.

Danais, Latreille, Encyc. Meth., ix. p. 10 (1819), [Part].
Euplœa, Fabricius, Syst. Glossat., in Illiger's Mag., vi. p. 280 (1807), [Part].
Danais, E. Doubl., Gen. Diurn. Lep., i. p. 89 (1847), [Part].

IMAGO.—*Antennœ* rather short, about half as long as the whole body, from $\frac{1}{3}$ to $\frac{2}{5}$ the length of the fore-wings, gradually but distinctly clubbed. *Fore-wings* prolonged in apical region; apex rounded; hind-margin slightly hollowed; inner margin rather prominent in basal half; first subcostal nervule given off a little before the end of discoidal cell, and ending freely on costa,—second at end of cell, immediately above junction of upper radial nervule,—third midway between second and fourth,—fourth terminating at apex,—fifth a little below apex; disco-cellular nervules forming a rather acute angle at junction of lower radial nervule. *Hind-wings* rather elongate, but obtusely rounded; costa nearly straight; discoidal cell rather short, its extremity widened, obliquely closed by lower disco-cellular nervule, which forms an acute angle with third median nervule; on lower side of first median nervule, or between it and submedian nervure, the ♂ with a small pouch or sac, in some species free and very prominent on the under side. *Fore-legs* very small, about equal in size in the two sexes; tarsi in the ♂ one- or indistinctly two-jointed, in the ♀ indistinctly three- or four-jointed. *Middle and hind legs* with tarsi well spined; the terminal claws long, without pulvillus or paronychia. *Abdomen* considerably shorter than inner margin of hind-wings.

LARVA.—A pair of long dorsal filaments on the third segment; a similar pair of shorter ones on the twelfth segment; sometimes (as in *D. Chrysippus*) with a third pair of moderate length on the sixth segment.

Pupa.—Thickest abdominal segment with a dorsal and lateral half ring, ridged and finely tuberculated.

The first (*Amauris*, Hübn.) and fourth (*Ideopsis*, Horsf.) sections of this genus, established by E. Doubleday (*op. cit.*), have been separated by later writers, *Danais* as restricted including the two sections of which *D. Chrysippus* (Linn.) and *D. Limniace* (*Cram.*) are representatives. Besides the different form and slightly different position of the sac in the hind-wings of the ♂, the sections are distinguishable by a very different colouring, the *Chrysippus* group being chiefly ochre-red with white-spotted black margins, while the *Limniace* group has the wings blackish or brown with greenish or whitish stripes and spots between the nervures.

It is curious that of this genus, containing about forty species and the most widely distributed of the Sub-Family, only two species should be found in the whole of the African continent. *D. Chrysippus* ranges all over Africa, and is a common species all through the Southern Extra-Tropical Sub-Region; but the other, a variety of *D. Limniace* which was named *Petiverana* by Doubleday (and subsequently *Leonora* by Mr. A. G. Butler), representing so decidedly Oriental and Australian a form, has hitherto only been brought from the Gold Coast and Angola on the west, and from Mombas and the Upper Nile on the east. It is very probable that other races of this section of *Danais* will be found to inhabit Eastern and Central Africa, and possibly a representative may extend as far as the Delagoa Bay district.

The dominant American species, *D. Erippus* (Cram.), which is apparently abundant from Canada to Uruguay, is at the present time ranging widely afield, having of late years appeared in New Zealand, and even been captured in England. *D. Chrysippus* (as will be seen below) has also an immensely wide, though different, distribution, extending north and south from Southern Italy to Cape Town, and west and east from Sierra Leone to Timor.

1. (1.) **Danais Chrysippus** (Linnæus).

Papilio Chrysippus, Linn., Mus. Lud. Ulr. Reg., p. 263, n. 82 (1764); Syst. Nat., ed. xii., tom. i., pars 2, p. 767, n. 119 (1767).

Papilio Chrysippus, Cram., Pap. Exot., pl. cxviii. ff. B, C. (1779).

♂ and ♀, *Limnas ferrug. Chrysippus*, Hübn., Samml. Exot. Schmett., bd. i. (1806); *Euplœa Chrysippe*, Hübn., Verz. Bek. Schmett., p. 15, n. 81 (1816).

Danais Chrysippe, Godt., Encyc. Meth., ix. p. 187, n. 38 (1819).

♂, ♀, and Vars., *Danais Chrysippus*, Trim., Rhop. Afr. Aust., i. p. 88, n. 56 (1862), and ii. p. 333 (1866).

♀, *Danais Chrysippus*, Trim., Trans. Linn. Soc. Lond., vol. xxvi. pl. 42, f. 5 (1869).

Var. A. *Papilio Alcippus*, Cram., *op. cit.*, pl. cxxvii. ff. E, F. [♂].

Var. B. *Euplœa Dorippus*, Klug, Symb. Phys., dec. v. t. 48, ff. 1–5 (1845). ♂, *Danais Dorippus*, Oberthür, Etudes d'Ent., iii. pl. 1, f. 5 (1878).

LARVA AND PUPA.

(Javanese).—Horsf. and Moore, Cat. Lep. E. I. C. Mus., vol. i. pl. 4, ff. 7, 7a (1857).
(South-African).—Trim., Rhop. Afr. Aust., pt. i. pp. 89, 90 (1862), and pt. ii. pl. 1, ff. 3, 3a (1866).
(Cingalese).—Moore, Lep. Ceyl., p. 7, pl. 3, f. 1b (1880).

Exp. al., 2 in. 8 lin.—3 in. 7 lin.

Dull red-ochre, with white-spotted black margins. Fore-wing : costa with a narrow black edging as far as extremity of discoidal cell, where the black suddenly widens, covering apical portion of wing, and narrowing again to anal angle,—the inner edge of the black is irregularly excavate; on costa, before middle, almost invariably an elongate, small, white mark; followed, a little farther on, by a similar, rather larger mark, immediately above extremity of discoidal cell, where there is generally a small, rounded white spot; beyond these, an oblique row of six more or less closely-connected, somewhat quadrate, white spots, extends from costa to bend of hind-margin, meeting a hind-marginal row of from four to six small white spots, situate close to hind-margin's edge, about its middle; two white spots at apex, the outer one close to commencement of hind-margin; above these two spots, and a little before them, are sometimes two minute white dots; almost always a rounded white spot between third and second median nervules, close to the junction of red and black; and between the same nervules, immediately beneath the sixth spot of the oblique row, a similar, rather smaller spot; *cilia* conspicuously black and white chequered. *Hind-wing : rather paler* than fore-wing; three ill-defined black spots on upper side of discoidal cell,—the largest spot occupying extremity of cell; on costa, beyond middle, a narrow blackish mark, relieved with white on either side, connected by a black line with a moderately broad, inwardly much excavate, black hind-marginal border, sometimes containing a few white dots near anal angle, more rarely a few near apex, sometimes wholly spotless; ♂ badge black; *cilia* as in fore-wing. UNDER SIDE.—White markings generally like those on upper side; *apex of fore-wing* (beyond oblique white band) *and whole of hind-wing, soft, creamy, ochre-yellow. Fore-wing :* red darker than on upper side near costa, paler near inner margin; black colouring within the oblique white band as on upper side; a hind-marginal narrow black band from apex, containing a conspicuous outer row of white spots throughout, and an inner row of smaller spots only bordering the apical yellow. *Hind-wing :* base black, containing three white spots; nervures and black markings all relieved by a white or whitish edging; costal spot broader than on upper side, with a conspicuous, white, black-tipped spot on each side of it; before it, on costa, a narrower, less conspicuous, but similar, black and white marking; hind-marginal band marked throughout with large and conspicuous white spots, arranged in pairs between nervules; spots bordering discoidal cell larger and blacker than on upper side; ♂ badge conspicuous, being *centred with white.* *Cilia* of both wings as on upper side.

Var. A. (*Alcippus*, Cram.) ♂ and ♀.

Disc of *hind-wing* more or less widely *suffused with white*, particularly on upper side.

Var. B. (*Dorippus*, Klug), ♂ and ♀.

Black and white of apical portion of *fore-wing* wanting, *replaced by the red-ochre ground-colour;* hind-marginal black of both wings blurred, and its white spots obsolete on upper side. General colour duller and paler than in type-form. Disc of *hind-wing* often suffused with white, as in *Alcippus.*

Aberration.—♀, *Exp. al.*, 2 in. 10 lin.

In *fore-wing*, the costal spots, the sub-apical bar as far as third median nervule, and (less completely) the small separate spot at junction of ground-colour and apical black, *united into one broad, rather suffused, white marking*, which extends a little into discoidal cell and narrowly along costa to before middle, leaving a thin black streak closing the cell.

Hab.—King William's Town (M. E. Barber, August 1870). In the collection of R. Trimen.

Larva.—Pale bluish-grey; on the back transversely barred with bright pale-yellow and streaked with black. Yellow bar on front of each segment from 3rd to 12th (both inclusive), edged with black both anteriorly and posteriorly, and usually divided mesially by a short black streak uniting the black edges; three thin black streaks across each of these segments in its middle and posterior portion, and three similar streaks also on 2nd and last segments; front of head with a black horseshoe-shaped streak; spiracular stripe bright-yellow, rather suffused; legs bluish-grey barred with black. Three pairs of moderately long, black, flexible filaments, springing from the back of the 3rd, 6th, and 12th segments respectively, in each case from near the extremities of the transverse yellow bar; all these filaments are crimson just at the base, and the front pair longer than the others. Length, 1 in. 6–9 lin.

Food-plants: *Gomphocarpus fruticosus* and other Asclepiads. "Near Grahamstown on *Gomph. fruticosus*, E. Meyer; in Trans-Kei on *Ceropegia Barberæ*, Harvey" (M. E. Barber). "Near King William's Town on *Stapelia sp.*" (J. H. Bowker).

Pupa.—Semi-transparent; either green or pinkish, and sometimes of a tint including both hues. A raised golden spot on each eye, at the base of the wings, and about the middle of the costal edge of the wings; also two similar spots on each side of back of thorax. On fourth segment of abdomen, dorsally and laterally, a thin blackish tuberculated ridge, edged posteriorly by a continuous row of golden dots. Attached to twigs of the larva's food-plant. Usual period of development into imago, fourteen to twenty days.

This well-known butterfly is an abundant species in nearly all parts of South Africa, but seems much less common near Cape Town than elsewhere. Its size and boldly-contrasted colours, in conjunction with its rather slow flight and habit of frequenting open ground and gardens, render it a very conspicuous object. Though so indifferent to concealment, I have often noticed that, when conscious of being pursued, it very considerably increases its speed, and exhibits very respectable powers of flight. Apart from the unpalatable nature which renders it distasteful to insect-eaters, there can be no doubt that the wide prevalence of *Chrysippus* is largely due to the circumstance that its larva affects chiefly, if not solely, asclepiad plants, which very few, if any, herbivorous mammals will feed upon.

I have met with the butterfly on the wing from November to May; Mr. W. S. M. D'Urban noticed it in British Kaffraria from December to July.

The larva is very conspicuous, and lives fully exposed on its food-plants. In walking, the first pair of filaments is kept in continual slow motion backward and forward, each filament moving alternately; but the other pairs are motionless.

I have not found the variable colouring of the pupa to accord with its immediate environment, though I have allowed the larvæ in confinement free choice of various convenient surfaces for pupation, with the view of ascertaining whether there was any relation between the green or reddish tint and the colouring of adjacent objects. It seems not improbable that this brilliant pupa stands in no need of special protection, but, like the imago (and apparently the larva also), is avoided by insectivorous animals.

The African specimens of *Chrysippus* differ from the Asiatic in their deeper red ground-colour, narrower subapical white bar in the fore-wings, and (usually) smaller and fewer white dots in the hind-marginal black borders.

The Variety *Alcippus*, Cr., with white suffused hind-wings but ordinary fore-wings, prevails very largely on the Western Coast of North-Tropical Africa, while on the Eastern Coast, and in Abyssinia, Nubia, &c., the Variety *Dorippus* appears to be as common as the type-form.

In South Africa the former is not uncommon, but the white on the hind-wings is less developed as a rule. *Dorippus*, on the contrary, is seldom met with, and the only example I possess was taken by the late Mr. M'Ken at D'Urban, Natal. It is a ♀, considerably larger than Klug's figure (*op. cit.*), with very little sign of the hind-wing's white suffusion, and much less fuscous clouding on costa of fore-wing, but with a good deal of the dusky tint over the basal half of both wings shown in Klug's Var. ♂ (fig. 5).

Mr. A. G. Butler (*Proc. Zool. Soc. Lond.*, 1884, pp. 480, 481) has published Major Yerbury's notes on *D. Chrysippus* at Aden, from which it appears that both the above-named varieties occur there commonly in company with the typical form, and that the latter and the variety *Dorippus* were very frequently taken *in coitu.*

This *Danais* is very accurately mimicked by the ♂ *Diadema Misippus* (Linn.), even its varieties *Alcippus* and *Dorippus* being copied by corresponding varieties of the ♀ *Diadema.* Less exact but very obvious mimickers are the form of the ♀ *Papilio Cenea* (Stoll), named *Trophonius* by Westwood, and the ♀ *Argynnis Niphe* (Linn.) The latter butterfly, so common in India and China, is recorded by M. Ch. Oberthür among the species taken in Abyssinia by the Marchese Antinori in 1877.

The very extensive range of *D. Chrysippus* is as follows, viz. :—

I. South Africa.
    B. Cape Colony.
        a. Western Districts. — Cape Town. Caledon (Genadendal: *G. Hettarsch*). Worcester. Robertson. Victoria West (Kenhart: *F. Chittenden*). Oudtshoorn (*Adams*). Knysna and Plettenberg Bay. Ookiep, Namaqualand District (*L. Péringuey*).

b. Eastern Districts.—Murraysburg (*J. J. Muskett*). Colesberg (*A. F. Ortlepp*). Uitenhage (*S. D. Bairstow*). Grahamstown. Kowie River Mouth (*J. Fry*). King William's Town.

d. Basutoland.—Maseru (*J. H. Bowker*).

D. Kaffraria Proper.—Butterworth (*J. H. Bowker*). Bashee River (*J. H. Bowker*).

E. Natal.

a. Coast Districts.—D'Urban. Verulam. Tongaati River.

b. Upper Districts.—Pietermaritzburg. Greytown. Estcourt (*J. M. Hutchinson*).

F. Zululand.—St. Lucia Bay (*H. Tower*).

K. Transvaal.—Potchefstroom (*T. Ayres*). Marico and Upper Limpopo Rivers (*F. C. Selous*).

L. South Bechuanaland.—Motito (*J. Frédoux*).

II. Other African Regions.

A. South Tropical.

a. Western Coast.—Damaraland (Otjimbingue: *H. Hutchinson*); "Swakop River (Wahlberg)": *Wallengren*). Angola ("S. Paolo de Loanda (*R. Meldola*)": A. G. Butler). Congo ("Kinsembo (*H. Ansell*)": A. G. Butler). "Chinchoxo (*Falkenstein*)": Dewitz.

aa. St. Helena.

*a*1. Interior.—Khama's Country, near Bamangwato (*H. Barber*). "Gubuleweyo and Umvungu (*Oates*)."—Westwood.

b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*). Mozambique ("Querimba": *Hopffer*). "Zanzibar (*Raffray*)."—Oberthür.

*b*1. Interior.—"Victoria Nyanza (*Rev. J. Hannington.*)"—A. G. Butler. "Kilima-njaro (*H. H. Johnston.*)"—F. D. Godman [*Dorippus*].

bb. Comoro Islands: "Johanna (*C. W. Bewsher*)."—A. G. Butler. Madagascar (Layard). "Bourbon": Boisduval. Mauritius. "Rodriguez (*Gulliver*)": A. G. Butler. Socotra (*J. B. Balfour*).

B. North Tropical.

a. Western Coast.—Fernando Po (*Bourke*). Gold Coast (*Swanzy*). Sierra Leone (*Cutter*).

b. Eastern Coast.—Somaliland (Cape Guardafui: *Heuglin*). Abyssinia ("Shoa (*Antinori*)": Oberthür; "Atbara": A. G. Butler). Red Sea ("Akeek Island and Harkeko (*J. K. Lord*))."—F. Walker. Nubia ("New Dongola and Ambukohl": Klug).

C. Extra-Tropical North Africa.

a. Western Coast.—Canary Islands (Teneriffe: Coll. Brit. Mus.)

b. Eastern Coast.—Egypt ("Cairo (*J. K. Lord*))."—F. Walker.

III. Europe.

A. Southern Coast.—Italy ("Naples."—Gagliardi). Greece ("Athens."—Doubleday). "Turkey."—A. G. Butler.

IV. Asia.

A. Southern Region.—Asia Minor. Syria. Arabia ("Wâdy Nash (*J. K. Lord*))."—F. Walker. "Aden (*J. W. Yerbury.*)"—A. G. Butler. Persia. India ("N.W. Provinces": *De la Chaumette;* Scinde:—"Kurrachee": *C. Swinhoe.* Madras: E. Ind. Mus.); Darjeeling: E. Ind. Mus.) Ceylon (*Layard*). Penang: Brit. Mus. Coll. China (Hongkong: Brit. Mus.)

B. Malayan Archipelago.—Java: Brit. Mus. "Philippine Islands."—A. G. Butler.

V. Australia.

A. Austro-Malayan Archipelago. Ceram: Brit. Mus. "Timor": Godart.

GENUS AMAURIS.

Amauris, Hübner, Verz. Bek. Schmett., p. 14 (1816).
Danais, E. Doubl., Gen. Diurn. Lep., i. p. 89 (1847), [Part].
Amauris, Reakirt, "Proc. Acad. Nat. Sci. Philad., 1866, p. 240."
„ Butler, Lep. Exot., p. 54 (1870).

IMAGO.—Characters of *Danais*, except the following, viz., *Antennæ* rather longer, with the club more abruptly formed, thicker, and curved; *palpi* with the third joint longer, more porrect. *Fore-wings* with the disco-cellular nervules forming a much more obtuse angle (or even a continuous curve only) at junction of lower radial nervule. *Hind-wings* with discoidal cell longer, and wider near its extremity; sexual badge of the ♂ not a distinct sac, but a double, elongated, shining patch, near anal angle, divided by the submedian nervure. *Abdomen* rather longer, and more distinctly thickened posteriorly.

LARVA.—With five pairs of divergent subdorsal filaments, on the 2nd, 4th, 6th, 11th, and 12th segments (*A. Echeria*).

PUPA.—Gibbous, moderately angulated.

The structural distinctions from *Danais* are so slight, that, without the additional characters presented by the larva and pupa, the peculiar *facies* of the group, and its absolute limitation to the Ethiopian Region, I should have hesitated to follow Reakirt and Butler in treating *Amauris* as a distinct genus.

The ten or eleven species known are all black or brownish-black, with extremely conspicuous, semi-transparent, white (rarely ochrey-yellow) spots and patches. In *A. Ochlea*, *Nossima*, and *dominicanus*, the white patches are so much enlarged as to occupy half the area of the wings, but in *A. Niavius* they are much reduced, and in the others still smaller and more broken into spots. The hind-wing patch, so conspicuous and largely developed in the majority of the species, becomes smaller in *A. Damocles*, very small in *A. inferna*, and altogether disappears in *A. Vashti*. Seven of the species (including the three South-African ones, *A. Echeria*, *A. Ochlea*, and *A. dominicanus*) are very accurately mimicked by butterflies of quite different groups (*Nymphalinæ* and *Papilioninæ*), and it is probable that the remaining species will also be found to have their faithful imitators in the countries where they occur.

Of the three species inhabiting Southern Africa, only *A. Echeria*, Stoll, is at all widely distributed, being found in wooded spots very generally, but not, as far as I know, occurring farther westward than the Knysna District of the Cape Colony. The very striking and conspicuous *A. dominicanus*, mihi, and *A. Ochlea*, Boisd., have not hitherto been recorded south of D'Urban in Natal. All the species of *Amauris* appear to be strictly sylvan in their haunts, but I have taken *A. Phædon*, Fab., in Mauritius, on flowers in gardens at some little distance from the woods.

In flight the members of this genus have a very deliberate, floating motion, and keep much about one spot. Unless they happen to be sporting about some elevated branches beyond the collector's reach, they are usually easy of capture.

2. (1.) Amauris Echeria (Stoll).

Papilio Echeria, Stoll, Suppl. Cram. Pap. Exot., pl. 29, ff. 2, 2b (1791).
Amauris Echeria, Hübn., Verz. Bek. Schmett., p. 14, n. 68 (1826).
Danais Vaillantiana, Godt., Encyc. Meth., ix. p. 183, n. 25 (1819).
Danais Echeria, Trim., Rhop. Afr. Aust., i. p. 86, n. 55 (1862), and Trans. Linn. Soc. Lond., xxvi. t. 42, f. 3 [♂], (1869).
Var. A. *Euplœa Echeria*, Boisd., App. Voy. de Deleg. dans l'Afr. Aust., p. 589, n. 48 (1847).
,, *Danais Echeria*, Trim., *op. cit.*, p. 87 (1862), and Trans. Linn. Soc., *loc. cit.*, t. 42, f. 7 (♀).

Exp. al., 2 in. 9 lin.—3 in. 2 lin.

Deep velvety-black, with pale ochrey-yellow and white spots. Fore-wing: in discoidal cell, a little beyond its middle, a narrow, elongate, irregularly shaped, oblique, yellow spot; below cell, and in an oblique line with the last-named spot (but a little beyond it), between second and first median nervules, a conspicuous, oval, large spot,—the largest on the wing; at extremity of cell, but above sub-costal nervure, a small yellow spot; a little beyond, and in a line with it, close to costa, a yellow dot is the first of a row of four spots, obliquely crossing apical portion of wing to near hind-margin, of which the second and third are the largest, and somewhat quadrate in form, and the fourth is near hind-margin, immediately beneath third median nervule; two small white spots near apex, that nearest costa being often split into two by the third subcostal nervule; near hind-margin, a small yellow spot beneath second median nervule, and another similar spot below first median nervule; in some specimens, on hind-margin about middle, and more rarely near apex, a few minute yellow or white dots; fringe narrow, white dotted. *Hind-wing:* on costa, about middle, commences a yellow band, which at first extends to extremity of discoidal cell, whence it abruptly turns almost at right angles, and in a suddenly much broadened form, to inner margin, of which it occupies the greater portion,—it is divided into *nine* unequal portions by the nervures crossing it; near hind-margin a row of yellow spots parallel to it, varying from three to nine in number; ♂ badge on submedian nervure well marked, but smaller than in *A. Ochlea*. UNDER SIDE.—Very similar in marking, *but paler than upper side. Fore-wing:* spots close to costa, and near hind-margin, *white;* row of white dots along hind-margin clearly defined and numerous, arranged in pairs between nervules,—two pairs between first median nervule and submedian nervure; apical portion of wing tinted *dark-brown. Hind-wing: glossed with brown,* particularly in hind-marginal portion; two conspicuous white spots at base, close to thorax; inner and outer row of hind-marginal spots both white and conspicuous, arranged in pairs between nervules,—between third median nervule and submedian nervure there are three spots in the inner row, and four in the outer. *Fringes* of both wings white-dotted.

Var. A. ♂ and ♀ (*Albimaculata*, Butl.)—*All the spots in fore-wing pure white.* Under side paler; the ground-colour of hind-wing and apical portion of fore-wing *pale-brown.* *Hab.* Natal, almost to exclusion of type-form.

Wallengren (*Lep. Rhop. Caffr.*, p. 20, in Kongl. Sv. Vetens.-Akad. Handl., ii. pt. iv., 1857) notes a "Kaffrarian" specimen in Wahlberg's collection, belonging to this variety, in which the outer hind-marginal row of white spots on the under side was entirely wanting.

Var. B. ♂.—*Spots very small throughout*, slightly tinged with yellow. *Hind-wing patch unusually small*, pale-yellow. *Hab.* Fernando Po (Lieut. E. Bourke, R.N.)

The species most nearly allied to *A. Echeria* is *A. Egialea* (Cram.), a native of West Africa, known to inhabit Sierra Leone, Cape Palmas, and Ashanti. *Echeria* is readily distinguished by the whole of its markings being smaller and less transparent (*especially the spot in the discoidal cell of fore-wing*), and by *the small and well-defined yellow band of the hind-wing*, the corresponding marking in *Egialea* beginning quite close to the base, and externally very gradually shading off into the brown ground-colour.

A. Phædon (Fab.), inhabiting Mauritius, is also a close ally, but its markings are, on the other hand, *smaller* than those of *Echeria* (with the exception of the hind-marginal spots, which are larger), and *the yellow band of the hind-wing* is totally different, being a rather *straight and even bar across outer area of the wing.*

LARVA.—Black, with narrow blue and orange longitudinal stripes. Median dorsal stripe, from 5th to 13th segment, very narrow, bright-blue; subdorsal lateral stripe interrupted, yellow-orange; spiracular stripe (superior) interrupted, pale-orange, (inferior) festooned on each segment, yellow-orange. Spiracles faintly ringed with light-blue. Skin slightly rugose. Head smooth, black. Five pairs of rather short, divergent, subdorsal black filaments, springing respectively from the 2nd, 4th, 6th, 11th, and 12th segments.

Food-plant not known: two specimens found in clearing bush.

PUPA.—Thick, short, gibbous, moderately angulated. Shining silvery-golden; the angles and points defined with markings of red and black.

Attached by the tail only; imago disclosed on the sixteenth day.

(The foregoing descriptions of larva and pupa are drawn up from Mr. W. D. Gooch's notes and pencil drawings of specimens observed at Little Umhlanga, near D'Urban, Natal, in October 1873.)

Like most of the *Danainæ*, this butterfly is rather gregarious, and the males are far more frequently met with than the females on the wing. It is strictly confined to woods and copses, and gardens immediately adjacent to them. Its flight is remarkably graceful and leisurely, and on calm days higher than that of *Danais Chrysippus*, though not nearly so extensive in range. It is fond of floating across open spots in the woods, flapping its wings twice or thrice in its course, and then of settling on some projecting twig and remaining for some time motionless, usually with the wings closed and hanging downwards. When in pursuit of a companion, or when itself pursued by the collector, *Echeria* displays the power of much more rapid motion. I have noted its appearance throughout the warmer months, viz., from the beginning of October to about the middle of April.

The typical form figured by Stoll is that which prevails in the Cape Colony and in that part of Kaffraria Proper which is near the eastern border of the Colony; but I took one specimen at Port Natal in the summer of 1867. The Variety A., with white spots in the fore-wings (first noticed by Boisduval), is, on the contrary, very scarce in the Colony—I only met with one at Knysna—but becomes more frequent on the Bashee River in Kaffraria, and is the prevalent form at Natal. Colonel Bowker also met with this variety at Delagoa Bay in 1878.[1]

The Variety B. above noted is in colouring much nearer to the type-form, and is remarkable as the only West-African (and indeed the only *Tropical*) example of *Echeria* that is known to me. I examined the fine collection made on the West Coast by Lieutenant Bourke of H.M.S. *Druid* in 1873, and he distinctly recollected the capture of this solitary specimen at Fernando Po. Without further material it is impossible to determine whether this specimen represents a characteristic West-African form or is a mere aberration.

Amauris Echeria is of special interest in relation to the mimicry by other butterflies of which it is the object. It may be said more than even *Danais Chrysippus* to set the fashion in South Africa. The most accurate imitator is the ♀ *Papilio Cenea*, Stoll, small examples of which it is almost impossible on the wing to distinguish from her model. Almost as good a mimic is *Diadema mima*, Trim., both sexes very closely resembling the white-spotted variety of *Echeria*. The ♀ *Papilio Echerioides*, Trim., is also an excellent copy; while *P. Brasidas*, Feld.—an unstable species closely allied to *P. Leonidas*, Fab.—presents some variations which very fairly imitate the favourite pattern. Some examples of the Nymphaline *Pseudacræa Tarquinia* (Trim.), especially the females, also indicate a decided leaning towards the prevalent livery.

Localities of *A. Echeria*.

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Knysna.
    b. Eastern Districts.—Grahamstown (Highlands: *M. E. Barber*).
  D. Kaffraria Proper—Bashee River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban. Avoca (*J. H. Bowker*).
    b. Upper Districts.—Pietermaritzburg (*Miss Colenso*).
  F. Zululand.—St. Lucia Bay (*H. Tower*).
  H. Delagoa Bay (*J. J. Monteiro*, and *J. H. Bowker*).

II. Other African Regions.
  A. North Tropical.
    a. Western Coast.—Fernando Po (*E. Bourke*).

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[1] It should be noted that intermediate specimens, viz., with only the spots near costa of fore-wings white, are occasionally captured.

3. (2.) Amauris Ochlea (Boisduval).

Euplœa Ochlea, Boisd., App. Voy. de Deleg. dans l'Afr. Aust., p. 589, n. 47 (1847).
Danais Ochlea, Trimen, Rhop. Afr. Aust., i. p. 85, n. 54 (1862), and ii. pl. 2, f. 6 (1866).

Exp. al., 2 in. 11 lin.—3 in. 6 lin.

♂ *Black, with a large semi-transparent white patch in each wing, and smaller similar submarginal spots;* cilia black varied with white. *Fore-wing:* originating before middle, a large oblique, elongate, irregular patch, divided into three portions by median nervure and first nervule, extends from subcostal nervure to submedian nervure considerably beyond middle; at extremity of discoidal cell (but *above* subcostal nervure) a small spot; a little beyond it a smaller spot; an oblique subapical bar of three confluent spots, extending from subcostal nervure to third median nervule; a submarginal row of four widely-separated spots, of which the first (near apex), third, and fourth are minute, but the second (near extremity of subapical bar) is of moderate size and rounded. *Hind-wing:* a very large sub-rhomboidal patch, divided into ten very unequal portions by crossing nervures, leaves a small triangular space at base, a very narrow costal edging, and a broad apical and hind-marginal border, widening greatly in anal-angular region, black; this patch extends to its farthest point between radial and third median nervule, and is narrowest (and rather suffused with greyish) on inner margin; a submarginal row of two or three minute white spots, the first close to apex and the last just below third median nervule; sexual badge large and conspicuous, the two smooth spaces occupying both sides of submedian nervure almost throughout its passage across the black portion of the wing. UNDER SIDE.—Chief white markings as on upper side; *ground of hind-wing and apical portion of fore-wing glossy ochreous-brown. Fore-wing:* two minute white spots close to apex; a row of four or five white dots along middle part of hind-marginal edge. *Hind-wing:* submarginal row of spots increased by several white dots, of which the last is just above submedian nervure; an outer row of white dots arranged in inter-nervular pairs along the whole hind-marginal edge as far as submedian nervure; basal space and costal edging pitchy-black, the former with a small but conspicuous white spot.

♀ rather larger than ♂, but with the same markings. *Hind-wing:* anal-angular inner-marginal region *dull brownish-grey.*

This *Amauris* is in colouring and pattern much like *A. dominicanus*, mihi, but at once distinguished by its inferior size and by the oblique median white bar (instead of white inner-marginal space) of its fore-wings. It is more nearly related to *A. Nossima*, Ward, a native of Madagascar, but the latter is also a much larger butterfly, and its white markings are proportionally so much more extensive as to occupy in both fore and hind wings the greater part of their area; the principal white patch of fore-wing occupying the discoidal cell almost to the base. Another ally is *A. Hyalites*, Butl., from Ambriz, leading in the direction of *A. Egialea* (Cram.); this butterfly has the hind-wing patch very like that of *Ochlea*, but may at once be recognised by its presenting in the middle of the fore-wing two widely separated spots instead of the broad unbroken bar.

I did not meet with this species while in Natal. Mr. W. D. Gooch informs me that it appears in very unequal numbers in different years, but is sometimes numerous. He found it, like *A. Echeria*, a strictly sylvan butterfly.

Colonel Bowker took nine examples at Delagoa Bay in September 1878, and described the species as abundant at Lorenço Marques, flying about with *A. Echeria*. At Quilimane he noticed it sporting in company with *A. dominicanus*. He subsequently (in 1879) forwarded several specimens captured on the coast of Natal.

Like the other South-African *Danainæ*, *A. Ochlea* is the object of mimicry by a *Diadema*, the imitator being *D. deceptor*, Trimen, an exceedingly rare species inhabiting the coast of Natal; but there is no known *Papilio* which copies it.

Localities of *A. Ochlea*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban (*M'Ken* and *J. H. Bowker*).
  F. Zululand.—St. Lucia Bay (*H. Tower*).
  H. Delagoa Bay (*J. J. Monteiro* and *J. H. Bowker*).

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—"Quilimane."—J. H. Bowker. "Zanzibar."—Boisd.

4. (3.) **Amauris dominicanus**, Trimen.

Danais Niavius (Linn.), var., Trimen, Trans. Linn. Soc., xxvi. pp. 511, 521, pl. 42, f. 6 (♂), (1869).

♂ ♀ *Amauris dominicanus*, Trim., Trans. Ent. Soc. Lond., 1879, p. 323.

Exp. al., (♂) 3 in. 11 lin.—4 in.; (♀) 3 in. 10–11 lin.

Black, with semi-transparent white patches and spots. Fore-wing: inner-marginal white patch large, roughly semicircular, not extending to base or anal angle or into discoidal cell; subapical oblique white bar broad, its extremities not attaining quite to costal or hind-marginal edges; a very oblique elongate white spot in outer half of discoidal cell; another (longitudinally) close to costa, immediately before subapical bar; two small rounded spots close to apex; a submarginal row of 3—4 small spots just below subapical bar, succeeded by a hind-marginal row of smaller spots. *Hind-wing:* one large white patch occupies the greater part of the area, leaving only a narrow basal, a linear costal, and a broad hind-marginal (much widened at anal angle) border, diminishing gradually along inner margin to base. UNDER SIDE similar, but the white markings all larger and with suffused edges—notably the hind-wing patch, which covers the whole inner-marginal and anal-angular region, and leaves only a rather narrow brown border at apex and along upper part of hind-margin. *Fore-wing:* apical region beyond bar brown. *Hind-wing:* two small white spots at base.

In the ♂ the nervures are strongly clouded with black, as well as the inter-nervular rays, in the large white patch of both wings; in the ♀ this character is either wholly wanting or very faintly indicated.

Closely allied to *A. Niavius*, Linn., but seems constantly to differ as follows, viz. (1) *its size is considerably larger*, the West African form expanding only 3½ to 3¾ inches; (2) *the great extent of the white patches* (especially that of the hind-wings, which in *Niavius* does not extend beyond the extremity of the discoidal cell) readily distinguishes it. In the clouding of the nervures and inter-nervular rays the ♂ *Dominicanus* exceeds the ♂ *Niavius*, but the reverse appears to be the case with the ♀s.

I only on two occasions met with this very fine *Amauris*, viz., on the 6th February 1867, in the Botanic Gardens, and on the 22nd, at the Umgeni Bridge, near D'Urban, in Natal. Three or four examples were floating about a wooded slope, quite in the manner of *A. Echeria*, but none descended within reach. The late Mr. M. J. M'Ken at different times forwarded several D'Urban specimens to the South-African Museum; and Colonel Bowker has recently, viz., on 20th November 1880, taken the butterfly in the forest at Clairmont, near the same place.

A. dominicanus is the austral representative of *A. Niavius* (Linn.), the well-known species of Tropical Western Africa, which is recorded from Angola, Ashanti, and Sierra Leone. It extends, however, far up the Eastern Coast, Colonel Bowker having taken several examples at Quilimane, and Gerstaecker (Gliederth.-Fauna des Sansibar-Gebietes, 1873, p. 367) recording two specimens from Mombas.

This butterfly is most accurately mimicked by *Euralia Wahlbergi*, Wallengren, which is the southern representative of the West-African *E. Anthedon*, E. Doubl., and differs from its tropical ally in exactly the same manner as *A. dominicanus* does from *A. Niavius*. Another imitator is a black-and-white form of the ♀ *Papilio Cenea*, closely allied to the West-African ♀ of *P. Brutus*, Fab., formerly known as *P. Hippocoon*, Fab.; and it is most interesting to note that while the Western ♀ *Papilio* and *Euralia* copy the Western *Amauris*, the Southern ones closely follow the differing pattern of *A. dominicanus*.

Localities of *A. dominicanus*.

- I. South Africa.
  - E. Natal.
    - *a.* Coast Districts.—D'Urban.
  - H. Delagoa Bay (*J. J. Monteiro*).
- II. Other African Regions.
  - A. South Tropical.
    - *b.* East Coast.—Zambesi (Rev. H. Rowley.) Quilimane (Col. J. H. Bowker.) "Mombas (Dr. O. Kersten)."—Gerstaecker.

SUB-FAMILY 2.—SATYRINÆ.

Satyrides, Boisd., Sp. Gen. Lep., i. p. 166 (1836).
Satyridæ, Swains., Hist. and Nat. Arrangem. Ins., pp. 93, 94 (1840), [Part].
,, Doubl. and Westw., Gen. Diurn. Lep., ii. p. 352 (1851).
Satyrinæ, Bates, Journ. Ent., 1861, p. 220; 1864, p. 176.

IMAGO.—Head small or rather small, always more or less hairy, often with a distinct frontal tuft of longer hairs; *eyes* usually naked, but in several genera hairy; *palpi* more or less flattened or compressed laterally, rather long, ascendant, nearly always very hairy beneath; *antennæ* usually short and slender, with the terminal club generally very long and gradually formed, and in some genera scarcely noticeable. *Thorax* short and narrow. *Fore-wings* large and broad, the hind-margin commonly entire, without angulation or dentation; discoidal cell rather long, always closed; one or more of the nervures generally more or less swollen at the base. *Hind-wings* large, usually rounded, but in some genera tailed or angulated at extremity of third median nervule, and in one (*Corades*, Hewits.) at anal angle; discoidal cell closed; groove or channel formed by inner margins shallow and incomplete, generally leaving the apical half of abdomen exposed. *Middle and hind legs* rather short and slender; the femora often finely hairy, the tibiæ scaly and often spinose, the tarsi usually finely spinose. *Fore-legs* very small, or even minute (especially in the ♂); sometimes altogether concealed by the hairy clothing of the thorax. *Abdomen* slender, rather short, seldom more than two-thirds of the length of the hind-wings.

Larva.—Smooth or (more commonly) pubescent, attenuated towards hinder extremity, which terminates in two more or less pronounced points or in a bifid fork. Head superiorly often bifid, sometimes with two distinct horns.

Pupa.—Moderately long, but rather thick; not or only bluntly angulated; head rounded or more or less bifid.

The *Satyrinæ* are, on the whole, probably nearer to the *Nymphalinæ* than to any other group, being certainly in all their stages not far removed from *Morpho* and the allied genera, or very far from the section represented by *Apatura*, &c., as regards their earlier stages. The generally weaker structure, thinner and less rigid wings, shorter and more slender antennæ, very prevalent inflation of the bases of the nervures of the fore-wing, and constantly closed discoidal cell and incomplete inner-marginal groove of the hind-wings, are characters serving to distinguish the perfect insects from the *Nymphalinæ* generally; while the extreme atrophy of the first pair of legs points to a strong affinity to the *Danainæ*. The relationship to the *Nymphalinæ* is best shown in some of the larger forms, such as the Indian genus *Neorina*, Westw., and the South-American *Tisiphone*, Hübn., in which the fore-wing nervures are not or but slightly dilated, and also in the genera *Debis*, Westw., and *Melanitis*, Fab. It is with some hesitation that I have determined on placing the South-African *Meneris*, Westw., among the *Satyrinæ*, looking to its robust structure generally, and its long and rather thick antennæ; but the hirsute palpi and eyes, the striking development of the ocellated spots of the hind-wings, the habits of the butterfly, and the characters presented by its larva and pupa, taken altogether, seem to justify the position so long ago assigned to this fine insect by Hübner.

The known larvæ of *Satyrinæ* feed on grasses, and are remarkably difficult to detect, being coloured like those plants, and marked with longitudinal stripes which accord with the lines of growth of the grass.

The singular fact that the larvæ of some species of the European genus *Satyrus* do not suspend themselves to assume the chrysalis state is supplemented in South Africa by the case of *Leptoneura Clytus* (Linn.), whose pupa has been discovered lying quite unattached on the ground under a stone.

The *Satyrinæ* are nearly all of middle size, only a few forms exceeding, and not many falling below it. Their colouring is for the most part rather sombre, being generally of a darker or lighter shade of brown, very commonly marked with spaces of brick-red or ochreous-yellow, and usually bearing more or less distinct eye-like spots (ocelli) in rings of a hue paler than the ground-colour. Among the more brilliant exceptions adorned with bright or metallic hues may be mentioned the blue *Ptychandra Lorquinii* of the Philippine Islands; the transparent, rosy- or violet-flushed South-American *Hetæræ;* the New Zealand *Argyrophenga* with silvery stripes, and the New Guinea and Australian *Hypocystæ* with silvery rings on the under side; and, most splendid of all, *Argyrophorus argenteus*, from Chili, whose entire surface is like burnished silver. Silvery centres, single or double, of the ocellated spots are, however, commonly met with; and a semi-iridescent gloss over the general surface of the wings is not uncommon.

The members of this Sub-Family are almost all very weak on the wing, their flight being wavering and erratic, near the ground, and never long sustained. I have noticed that the more active of them are those which do not possess the basal inflation of the fore-wing nervures so characteristic of the group generally. The haunts of most of the genera are in open ground, but a good many of the more remarkable and aberrant forms inhabit woods; some even preferring the thickest shades, and not voluntarily taking flight before sunset. The inexhaustible supply of grasses, which constitute the sole known food-plants of their caterpillars, probably accounts for the extreme abundance of many of the *Satyrinæ*, familiar to every one who has traversed meadow, plain, or mountain in the summer or early autumn. The innumerable *Satyri* and *Erebiæ* of Europe are represented in South Africa by the much less numerous species of *Leptoneura* and *Pseudonympha*, several of which, however, occur in the utmost profusion of individuals. The last-named genus is the largest, containing eleven species, while *Leptoneura* has seven representatives. Of the remaining seven South-African genera, four—viz., *Ypthima*, *Physcæneura*, *Cænyra*, and *Meneris*—have single representatives only, and the two latter appear to be restricted to the extra-tropical region. Out of the twenty-nine recorded species as many as twenty-one seem to be endemic; six extend into the Southern Tropic; and two have a much wider range,—*Ypthima Asterope* inhabiting all Tropical Africa and a great part of Southern Asia, and *Melanitis Leda* extending throughout the Old-World Tropics.

GENUS YPTHIMA.

Ypthima, Westw., Gen. Diurn. Lep., ii. p. 394 (1851).
Yphthima, Hewitson, Trans. Ent. Soc. Lond., 3rd Ser., ii. p. 283 (1865), *Monograph*.

IMAGO.—*Head* small, hairy in front; *eyes* smooth; *antennæ* short, slender, with an elongate, narrow, but distinct club; *palpi* long, slender, divergent, thickly clothed inferiorly with long bristly hairs, except the terminal joint, which is long, slender, and with only a few short hairs. *Thorax* short, narrow; downy and hairy beneath. *Fore-wings* with apex rather pronounced; hind-margin entire; costal nervure much, median nervure slightly, swollen at base; discoidal cell short, broad, abruptly sub-truncate, the middle and lower disco-cellular nervules forming a slightly-curved continuous line; first subcostal nervule originating just before extremity of cell, second at a considerable distance beyond it. *Hind-wings* much rounded externally, entire; discoidal cell short, broad, obliquely truncated at extremity. *Fore-legs* in the ♂ extremely small, quite concealed among the hair of the prothorax, reduced to one rounded piece attached to the coxa; in the ♀ small (but very much larger than in the ♂), of the ordinary development, slender, scaly. *Middle and hind legs* rather short, slender, clothed with scales, the femora slightly hairy beneath.

Abdomen short, slender.

This genus is mainly Asiatic, seventeen of the twenty-two recorded species being natives of Asia or the Indo-Malayan Islands. Two of these (*Y. Asterope*, Klug, and *Y. Nareda*, Kollar) extend to Africa, where they are widely distributed, and two others (*Y. Batesii*, Felder, from Madagascar, and *Y. Itonia*, Hewits., from the White Nile) appear to be confined to the Ethiopian Region. The three remaining species inhabit Australia or the Austro-Malayan Islands. The only species that enters the South-African Sub-Region is the very widely-ranging *Y. Asterope*.[1]

The *Ypthimæ* are small and dull-coloured butterflies, usually of an unvaried obscure greyish-brown on the upper side, bearing a well-marked bipupillate black ocellus near the apex of the fore-wings, and from one to six smaller unipupillate ocelli towards the hind-margin of the hind-wings. The under side is closely hatched with minute, irregular, short, dark and light lines, and the ocelli on it are usually more conspicuous than on the upper side.

The extraordinary atrophy of the fore-legs of the male, and the disposition of the subcostal nervules in the fore-wings, combine with the peculiar *facies* of these butterflies to distinguish the genus. Their structure is very weak, and their flight feeble and near the ground. The larvæ and pupæ do not appear to have been observed.

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[1] Professor Westwood (App. to Oates's "Matabeleland," 1881, p. 350) gives *Y. Nareda* as having been taken by the late Mr. Oates near the Victoria Falls of the Zambesi River.

5. (1.) **Ypthima Asterope** (Klug).

♂ ♀ *Hipparchia Asterope*, Klug, Symb. Phys., dec. iii. t. xxix. ff. 11–14 (1832).
♀ *Satyrus Asterope*, Lederer, Verh. Zool.-Bot. Vereins in Wien, 1855, t. i. f. 6 [*apud* Hopffer, *op. cit.*]
Ypthima Asterope, Hopff., Peters' Reise Mossamb., p. 395 (1862).
Yphthima Asterope, Hewits., Trans. Ent. Soc. Lond., 3rd Ser., ii. p. 283, n. 1 (1865).
Yphthima simplicia, Butl., Ann. and Mag. Nat. Hist., 4th Ser., xviii. p. 481 (1876).
Var. Ypthima Norma, Westw., Gen. Diurn. Lep., pl. 67, f. 1 (1851).

Exp. al., 1 in. 3–8 lin.

Brownish-grey; in fore-wing, a large, or rather large, black subapical ocellus with two bluish-silvery pupils and a well-defined pale-yellowish iris; in hind-wing, a subanal-angular similar (but unipupillate), small, or very small, ocellus. Fore-wing: ocellus in a discal more or less distinct rounded paler space, defined by a darker encircling streak; iris of ocellus externally edged with a dark ring. *Hind-wing:* ocellus between first and second median nervules, sometimes minute, but seldom indistinct; in some examples a faintly-marked submarginal dark line. UNDER SIDE.—*Hoary-grey, finely and closely hatched or striolated with greyish-brown. Fore-wing:* ring of ocellus paler, brighter; dark encircling streak well defined inwardly and outwardly, and inferiorly merged in a good-sized discal brownish-grey patch, free from any intermixture of hoary-grey, which reaches inner margin and posterior angle. *Hind-wing:* besides the ocellus between 1st and 2nd median nervules (which is usually smaller than on upper side, and occasionally very minute), there is usually a subapical, quite similar one between the subcostal nervules, and almost invariably a third very small or minute one close to anal angle itself; three irregular brownish transverse striæ (of very variable definition, and seldom really distinct), viz., one (the most ill-expressed) before middle,—the second (usually the most apparent) just beyond middle, angulated rather acutely on radical nervule,—and the third (commonly fragmentary) submarginal, and biangulated on radial and third median nervules.

In a ♂ taken on the Shashani River (Makalaka Country) by Mr. F. C. Selous, not only is the principal ocellus of the hind-wing larger than usual on the upper side, but the minute one at anal angle is represented, and there is a third minute ocellus quite abnormally situated between 2nd and 3rd median nervules; while in the fore-wing a very minute ocellus is inferiorly attached to the large subapical one.

These peculiarities are alike on right and left sides, but are limited to the upper side.

The largest example (1 in. 8 lin. in expanse) is a ♀ taken at Delagoa Bay by Mrs. Monteiro. This specimen has the ocelli on the under side of the hind-wing very minute, but the transverse striæ better marked than usual.

The Arabian and Syrian type of this butterfly—with which Mr. Butler's *Y. simplicia* from Abyssinia seems very closely to agree—has the ocelli represented as larger than those of the South-African specimens which I have examined, especially in the ♀; and scarcely any trace is depicted of the transverse striæ of the under side of the hind-wing. This latter feature is almost always more or less characteristic of the species, the central stria only being of frequent definition. The only individual in which I have found all three striæ well marked is a ♂ taken in Swaziland by the late Mr. E. C. Buxton; but a ♂ sent from Delagoa Bay by Mrs. Monteiro (in which the hind-wing is whiter than usual) exhibits them very fairly, and so does also a ♂ captured by Mr. W. Morant at Colenso, in Natal. As a rule, these striæ are most obsolete, as far as South Africa is concerned, in examples inhabiting the Cape Colony, and more developed in the countries to the east and north-east of it. A Cape Coast Castle ♂ in the South-African Museum, which was taken by Mr. J. Morton Pask, not only has the striæ well defined on the under side, but the central and marginal ones also expressed strongly on the upper side. The dark discal space below the ocellus on the under side of the fore-wing is variable in extent, but, as Hewitson (*loc. cit.*) points out, a constant distinguishing character of *Asterope.*

I have not seen the *Y. Norma* of Westwood, from China; but both Hewitson and Mr. A. G. Butler (Cat. Satyridæ in Brit. Mus., p. 148) agree in regarding it as a variety of *Asterope*, and the figure in the "Gen. Diurn. Lep.," cited above, appears to differ only in its smaller size, darker colour, and want of the ocellus on the upper side of the hind-wing. Hewitson (*loc. cit.*) notes that "there are similar varieties from the Holy Land."

In 1867 I took a single ♀ near Greytown, in Natal, in the same spot in which *Physcœneura Panda* and *Cœnyra Hebe* occurred; its weak flight and habit of frequently settling on the ground made it resemble those two species. I also met with several specimens at Klipdrift, on the Vaal River, Griqualand West, in September 1872; they were flitting among and sitting on the large stones on the river-banks; and I observed the same habits in others of the species which, in the summers of 1876 and of 1877, I found near Montagu and Robertson in the Cape Colony. Robertson is the most southern locality of this butterfly known to me; but the insect is so very inconspicuous and haunts such arid rocky stations, that it would easily escape the notice of any one but a lepidopterist, and may occur in many places from which it is at present unrecorded. In 1870 Colonel Bowker sent me the paired sexes, captured by him at Aliwal North, on the north-eastern boundary of the Cape Colony; except in its larger size and less pronounced darker streaks, the ♀ example does not differ from the ♂.

Localities of *Ypthima Asterope.*

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Robertson. Montagu.
    b. Eastern Districts.—Between Somerset East and Murraysburg (*J. H. Bowker*). Aliwal North (*J. H. Bowker*). Burghersdorp (*D. R. Kannemeyer*).
    c. Griqualand West.—Klipdrift.

E. Natal.
  b. Upper Districts.—Greytown. Estcourt (*J. M. Hutchinson*). Colenso (*W. Morant*). Ladysmith, Biggarsberg, and Rorke's Drift (*J. H. Bowker*).
F. Zululand.—Isandlhwana and Napoleon Valley (*J. H. Bowker*). St. Lucia Bay (*Colonel H. Tower*).
G. Swaziland (*E. C. Buxton*).
H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).
K. Transvaal (*T. Ayres*).
L. Bechuanaland.—Motito (*Rev. J. Frédoux*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Damaraland (R. Swakop: *Wahlberg*)."—Aurivillius. "Angola (*Pogge*)."—Dewitz.
    b. Eastern Coast.—"Querimba (*Peters*)."—Hopffer. Zanzibar (*J. H. Bowker*). "Mombas (*Kersten*)."—Gerstaecker.
    *b*1. Eastern Interior.—Between Limpopo and Zambesi River (*T. Ayres*). Shashani River (*F. C. Selous*). Zambesi (*F. C. Selous*).
  B. North Tropical.
    a. West Coast.—"Calabar."—Hewitson. Cape Coast Castle (*J. M. Pask*).
    b. East Coast.—Red Sea: "Harkeko and Hor Tamanib (*J. K. Lord*)."—Walker.
    *b*1. Eastern Interior.—Abyssinia: "Atbara."—Butler.

IV. Asia.
  A. Southern Region.—"Arabia and Syria."—Klug, et auct. "Aden (*J. W. Yerbury*)."—Butler. "Java and China (Coll. Brit. Mus.)"—Butler.

GENUS CŒNYRA.

Cœnyra, Hewits., Trans. Ent. Soc. Lond., 3rd Ser., ii. p. 281 (1865).

IMAGO.—Closely allied to *Ypthima*. *Antennæ* rather longer, the club less distinct, more gradually thickened. *Palpi* with shorter, less bristly hair beneath; terminal joint shorter, not so acute. *Fore-wings* with costa much arched; apex not pronounced; hind-margin decidedly convex; costal nervure much swollen, but median simple; first subcostal nervule arising considerably, second a little, before extremity of discoidal cell; in ♂, on submedian nervure, before middle, a large, elongate, darker patch or badge, set with scattered hairs; discoidal cell a little longer than in *Ypthima*, the middle and lower disco-cellular nervules of about equal length, and together forming a strong inward curve. *Hind-wings* much rounder, especially at base of costa and at anal angle.

Abdomen considerably longer than in *Ypthima*.

Mr. Hewitson founded this genus on a beautiful South-African Satyrine, described by me in 1862 as *Yphthima Hebe*. The characters given rightly distinguish this butterfly from the genus *Ypthima*, and the curious marking, exhibiting rufous transverse streaks on both surfaces, and in the fore-wings two unipupillate ocelli of equal size, instead of the single bipupillate one of *Ypthima*, renders the species easy of identification. Owing to paucity of specimens, I have not been able to examine the fore-legs of the ♂, but they are evidently very minute; those of the ♀ agree with the same limbs in the ♀ *Ypthima.*

6. (1.) Cœnyra Hebe (Trimen).

♂ *Yphthima Hebe,* Trim., Trans. Ent. Soc. Lond., 3rd Ser., i. p. 280 (1862); Rhop. Afr. Aust., ii. p. 205, n. 118, pl. 4, f. 3 [♂ var.], (1866).
♀ ♂ *Cœnyra Hebe* (*Corycia* in plate), Hewits., Trans. Ent. Soc. Lond., 3rd Ser., ii. p. 281, pl. 17, ff. 1, 2 [♀], (1865).

Exp. al., 1 in. 4–8 lin.

♂ *Dull greyish-brown; fore-wing with four indistinct transverse ferruginous striæ and two silvery unipupillate ochreous, yellow-ringed, black ocelli of about equal size; hind-wing with four or five similar smaller ocelli. Fore-wing:* striæ commencing on subcostal nervure,—the first short, oblique, not reaching below median nervure,—the second (a little before middle) straighter, longer, reaching to submedian nervure,—the third short, curved, marking end of discoidal cell, inferiorly joining the fourth or third median nervule,—the fourth longer, reaching to submedian nervure, curving outwardly below ocelli; beyond this last striæ are the two discal subapical ocelli, separated by the third median nervule, and faintly encircled with ferruginous; two submarginal parallel dark-brown streaks. *Hind-wing:* the two ocelli between first and third median nervules, of about equal size, much larger than the rest, which are very small; submarginal streaks as in fore-wing, but closer together. UNDER SIDE.—*Pale dull-yellowish; the striæ conspicuous, ochreous-red, and marking hind-wing as well as fore-wing; all ocelli very distinct, with pale-yellow ring, and circled with ferruginous. Fore-wing:* swelling of costal nervure edged with ochreous-red; submarginal streaks very distinct. *Hind-wing:* five transverse striæ, viz., the first, third, and fifth (respectively close to base, before middle, and about middle) quite across from costa to inner margin; the second (in cell near base) and the fourth (closing discoidal cell) short and thin,—the fourth inferiorly joined to the fifth on third median nervule; six ocelli, of which the first, between subcostal nervules, is the largest, and the second, third, and sixth smaller than the remaining two; submarginal streaks very distinct.

♀ (from Hewitson's figure and description, *loc. cit.*) *Paler and duller; transverse striæ darker, more suffused,*—the third and fourth indistinctly present on upper side of hind-wing; ocelli of hind-wing larger, especially the two upper of the four.

Var. A. (♂ and ♀). [♂ fig. *Rhop. Afr. Aust.*]—♂ *much paler; the striæ orange-red, and some of them much enlarged inferiorly; ocelli all in pale-yellow (rather dull) rings, and circled faintly with dusky-brownish;* hind-margins tinged with dusky-brownish. *Fore-wing:* the second and fourth striæ much widened inferiorly (especially the fourth), and sometimes confluent below first median nervule; inner-marginal badge fuscous, conspicuous. *Hind-wing:* the fifth stria occasionally indistinctly represented, dull-reddish; ocelli above third median nervule rarely obsolete; in one example the fifth (subapical) ocellus is represented. UNDER SIDE.—*The striæ arranged as in type-form, but much enlarged* (especially the 2nd and 4th in fore-wing and the 3rd and 5th in hind-wing); *better defined, and of brighter red than on upper side;* all the ocelli very distinct in clear pale-yellow rings, narrowly encircled with fuscous-brown.

♀. Paler; red striæ brighter and better marked superiorly in fore-wing, and the three outer of them well represented in hind-wing; ocelli larger, especially in hind-wing, where the first (subapical) and sixth (subanal-angular) are more or less distinctly represented. UNDER SIDE.—Quite as in ♂, but markings, if anything, rather brighter and better defined.

(A ♂ *aberration,* taken by Colonel Bowker in the Bashee River, has the 2nd, 3rd, and 4th striæ of the fore-wing on both upper side and under side, and the 3rd, 4th, and 5th striæ of the hind-wing on the under side, completely confluent throughout, so as to form a broad fascia.)

Hab.—Eastern Cape Colony and Kaffraria Proper.

The variety just described was first discovered in Kaffirland by Colonel Bowker, and its appearance is so dissimilar from that of the type-form from Natal, that I felt disposed at first to separate it as a distinct species. Except, however, the great development and much brighter colouring of the transverse striæ, there is no character of importance to warrant its separation from *Hebe* proper. While the variety, though very local, does not seem to be very scarce as regards individuals, the typical *Hebe* from Natal is still very rare. I met with only one, in the "Thorns" country near Greytown, on 12th March 1867. It was flitting about stony slopes, in company with *Physcæneura Panda* (Boisd.), and frequently settled on the ground. This, like the specimen from Natal in the British Museum, on which I founded the species, was a ♂; and not having seen any other examples of either sex, I am obliged to describe the ♀ from the late Mr. Hewitson's rough figure and very brief description. Colonel Bowker wrote from the Bashee that there was nothing in the habits of the beautiful variety to distinguish it from other commoner *Satyrinæ.*

Localities of *Cœnyra Hebe.*

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—Kleinemond River, Bathurst (*Mrs. Barber* and *Miss F. Bowker.—Var.* A.) King William's Town (*J. H. Bowker.—Var.* A.) East London (*P. Borcherds.—Var.* A.)
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker.—Var.* A.)
  E. Natal.—Greytown.
  H. "Delagoa Bay" (*Kirby,* Cat. Hewits. Coll.)

GENUS PHYSCÆNEURA.

Physcœneura, Wallengr., Kongl. Sv. Vet.-Akad. Handl., 1857, Lep. Rhop. Caffr., p. 32.
Periplysia, Gerst., Gliederth.-Fauna d. Sansibar-Geb., p. 370 (1873).

IMAGO.—Closely allied to the two preceding genera, *Ypthima* and *Cœnyra*. *Antennæ* very short and slender, with a cylindrical, elongate, gradually-formed but distinct club, rather blunted at the tip; *palpi* with long bristly hairs beneath (not so thickly set as in *Ypthima*), the terminal joint very long and sharply pointed, not hairy. *Fore-wings* shaped as in *Ypthima*, except in being a little more elongate and more rounded at apex; costal nervure largely swollen basally, the other nervures simple; first subcostal nervule originating before extremity of cell (a little nearer base than in *Ypthima*), the second at some distance beyond it. *Hind-wings* longer than in *Ypthima*, and more rounded at anal angle. *Cilia* of wings remarkably long and sparse, especially in ♀.

I have not had sufficient material to admit of dissection, but it is evident under the lens that while the fore-legs of the ♂ cannot be made out at all among the hairs of the breast, those of the ♀ are greatly reduced, being very much smaller than those of ♀ *Ypthima*, and with the tarsus apparently almost obsolete.

Irrespective of the structural differences mentioned, *Physcœneura* exhibits the peculiarity in marking of possessing on the fore-wings a series of five, and on the hind-wings a series of six or seven ocelli, which, while conspicuous and silvery-centred on the under side of the wings, are on the upper side ill-defined and almost blind (*Panda*), or wanting altogether (*Leda*). The two known species differ remarkably in colouring, *P. Panda* (Boisd.) being on the upper side of the ordinary dull-brown, with dull-rufous, ill-marked ocelli, while *P. Leda* (Gerst.) is white margined with blackish, after the manner of a *Terias*; and on the under side the conspicuous vermiculation, general in *Panda*, is confined in *Leda* to the margins of the wings.

The genus is not known to extend northward beyond South-Tropical Africa; and while *Panda*, the type of the genus, ranges from Natal to Matabeleland and Damaraland, *Leda* has hitherto only been recorded from Mombas on the East Coast, where it was discovered by Dr. Kersten.

7. (1.) Physcæneura Panda (Boisduval).

Satyrus Panda, Boisd., App. Voy. de Deleg., ii. p. 594, n. 85 (1847).
Physcœneura Panda, Wallengr., Kongl. Sv. Vet.-Akad., 1857, Lep. Rhop. Caffr., p. 33.
♀ *Erebia Panda*, Hopff., Peters' Reise nach Mossamb.,—Ins., p. 392, pl. xxv. ff. 1, 2 (1862).
♂ *Erebia Panda*, Trim., Rhop. Afr. Aust., ii. p. 204, n. 117 (1866).

Exp. al., 1 in. 5–9 lin.

♂. *Dull-brown, each wing with a discal transverse row of rather dull ochrey-red, black-centred spots. Fore-wing:* swollen base of costal nervure ochrey-red; five spots of discal row confluent, forming a tolerably broad band near hind-margin. *Hind-wing:* spots of discal row three to five (the two upper ones often wanting), smaller than in fore-wing, quite separate, the last (close to anal angle) bipupillate; in some examples a more or less distinct thin white line, black-edged on both sides, on inner and hind margins near anal angle. UNDER SIDE.—*Very closely striated transversely with numerous irregularly-confluent, slender, alternate, very pale-yellowish and fuscous streaks; spots of transverse discal row bright ochrey-yellow with brilliant-silvery centres. Fore-wing:* swelling of costal nervure ochrey-yellow; all inner-marginal area below median nervure and first median nervule dull-fuscous without any pale-yellowish striolation; band of confluent spots edged with fuscous on both sides; hind-marginal border beyond spots pale-yellowish, almost free from any black striolation, but with two well-defined, almost parallel, black linear streaks from costa to a little below first median nervule. *Hind-wing:* transverse striolation extends to inner-marginal edge; five spots of discal row much larger than on upper side, contiguous, finely black-edged; an additional, similar, larger spot before, and apart from, the row of five, between subcostal nervules; submarginal black linear streaks as in fore-wing, but the inner one slightly sinuate-dentate.

♀. *Paler, the striolation of the under side vaguely perceptible; ochrey-red spots larger*; *in fore-wing more suffused, and forming a broader band; in hind-wing not fewer than four* (*usually five*), *sometimes contiguous.* UNDER SIDE.—*Fore-wing:* the general striolation extending to inner margin.

Specimens of both sexes taken at Delagoa Bay by Mrs. Monteiro are smaller and darker than those which I met with in Natal; and in one ♂ the spots of the fore-wing on the upper side are very small, and those of the hind-wing obsolete except that close to anal angle. It is very singular that in all the six examples (three of each sex) captured by Mr. H. Barber in the Northern Transvaal, in a ♀ obtained on the Upper Limpopo by Mr. F. C. Selous, and also in a ♀ taken by the former gentleman in the Matabele country, the inner of the two submarginal linear black streaks is in the fore-wing rather sharply dentate (instead of being nearly straight), and in the hind-wing quite deeply festooned (instead of being sinuate-dentate). I find the same peculiarity noted as present in the single specimen (a ♂) brought by the late Mr. C. J. Andersson from Damaraland; but none of the Delagoa Bay examples exhibit it, nor does it appear in the figure of the female obtained at Inhambane by the Peters Expedition. I cannot discover that this feature is associated with any other distinction in the specimens possessing it, except a slight tendency to more confluence in the black striolæ of the under side generally.

The remarkable beauty of the under side of this butterfly is in striking contrast to the dull *Erebia*-like colouring of the upper side, and at once distinguishes *Panda* from all the other South-African *Satyrinæ*. Its only known congener (*P. Leda*, of Gerstaecker, from Mombas) is of totally different aspect, owing to all the field of the wings being pure white; the upper side having an unspotted fuscous margin, and the under side a slightly striolated one, with spots resembling those of *Panda*.

Only on one occasion have I seen this species in life, viz., on the 12th March 1867, when it was by no means uncommon in the "Thorns" country near Greytown, in Natal. About the steep exposed hillsides specimens of both sexes flitted constantly, but with no activity, keeping close to the ground, and frequently settling on it. The elaborately-ornamented under side of the wings was not conspicuous at a little distance.

Localities of *Physcænura Panda*.

I. South-Africa.
  E. Natal.
    b. Upper Districts.—Greytown. Estcourt (*J. M. Hutchinson*).
  F. "Zululand (*Delegorgue*)."—Boisduval.
  H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).
  I. "Inhambane (*Peters*)."—Hopffer.
  K. Transvaal.—North-West District (*H. Barber*). Upper Limpopo River (*F. C. Selous*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—Damaraland (*C. J. Andersson*).
    *b*1. Eastern Interior.—Kama's Country and Matabeleland (*H. Barber*).

GENUS PSEUDONYMPHA.

Pseudonympha, Wallengren, Kongl. Sv. Vet.-Akad. Handl., 1857, Lep. Rhop. Caffr., p. 31.

Erebia (Dalman), Westw., Gen. Diurn. Lep., ii. p. 376 (1851); Trimen, Rhop. Afr. Aust., ii. p. 196 (1866).

IMAGO.—*Head* small, very hairy; *eyes* smooth; *palpi* long, slightly ascendant, covered with hair throughout, but especially beneath, where the hairs are densely set, long, and bristly,—the terminal joint rather long, slender, acute; *antennæ* short, with the club usually rather elongate and gradually thickened, but in some species (*P. Sabacus*, *Hippia*, *vigilans*, &c.) more abruptly formed.

Thorax short and narrow, more or less hairy above, densely hairy beneath. *Fore-wings* with costa moderately or slightly arched; hind-margin entire, nearly straight; costal nervure only swollen at base; discoidal cell short, broad, the nervules closing it forming a more or less obtuse angle towards base at junction of lower discoidal (radial) nervule; first branch of subcostal nervure arising just before or at extremity of discoidal cell, second branch a long way beyond it. *Hind-wings* with hind-margin entire or very slightly sinuated; anal angle somewhat prominent; discoidal cell short superiorly but prolonged inferiorly, the closing nervules running very obliquely, and the lower one being twice as long as the upper. *Fore-legs* of ♂ minute, scaly; tibia and tarsus together but little longer than femur; a scanty clothing of rather short bristly hairs on femur; tibia and tarsus densely clothed with very long stiff hairs; of ♀ rather long, slender, scaly; femur and tarsus of about equal length; tibia a little shorter, ending in a blunt spur, and with a few bristles superiorly; tarsus with four joints, shortly spinose beneath and at extremity. *Middle* and *hind legs* of moderate length, rather slender; femur scaly; tibiæ with a few spines beneath, and with terminal spurs long; tarsi spinose inferiorly.

Abdomen short, in ♂ very slender.

The butterflies of this genus are very nearly allied to *Erebia*—a group well known from its great development in the Alpine tracts of Central Europe. They are, however, separable by the following characters, viz., (1) their much less robust structure generally, especially as regards the shorter and more slender abdomen, which in the ♂ is not thickened at the end; (2) the less density of their hairy clothing, especially on the head, palpi, and thorax; (3) their shorter and more slender antennæ; (4) the rise of the second subcostal nervule of their fore-wings far beyond, instead of before or just about, the extremity of the discoidal cell; (5) the constantly swollen base of the costal nervure of their fore-wings; and (6) the greater width (and in the fore-wings less length) of their discoidal cells.

The *Pseudonymphæ* known are butterflies of small or moderate size, very much resembling some of the species of *Erebia*. Unlike the latter, however, they are all of one pattern of colouring and marking. This consists of a ground of paler or darker dull-brown, with a larger or smaller discal patch of fulvous in the fore-wings and usually in the hind-wings. Except in rare instances of aberrant individuals, the fore-wings bear only a single bipupillate ocellus not far from the apex, while the hind-wings (in some cases devoid of markings) usually present two submarginal unipupillate ocelli. The underside is generally mottled or freckled, and paler than the upper side; the fore-wings are of the same pattern as above, but often with a larger field of fulvous; while the hind-wings bear from two to six submarginal ocelli, and two transverse streaks (often enclosing a darker or paler space) rather before middle, as well as often a third streak beyond the ocelli. Of this pattern the transverse streaks and the ocelli on the under side of the hind-wings vary most in the different species, both characters being almost obsolete in *P. Hyperbius* and *P. irrorata.* The eleven species recognised by me as inhabiting South-Africa seem, with the exception of *P. Natalii* (Boisd.), which extends beyond the Southern Tropic, to be peculiar to that region, but a twelfth species, closely allied to *P. Natalii,* occurs in Southern Tropical Africa, so that the genus may perhaps have a wider range than has hitherto been assigned to it. The species most generally distributed in South-Africa are *P. Cassius* (Godt.), *P. Sabacus* (Trim.), and *P. vigilans* (Trim.), but the first-named seems nowhere so abundant as the others. *P. Narycia*, Wlgrn., and *P. Neita*, Wlgrn., are widely spread in Eastern South Africa, but cannot be termed common; and the remaining species appear to be very local and scarce. As the country becomes better explored, especially in its mountainous tracts, new forms of *Pseudonympha* will very probably be discovered. The known species are very closely related, and in several cases are difficult to distinguish. They all frequent open ground, *Cassius* only seeming to show any liking for the neighbourhood of woods or plantations, and their flight (except perhaps in the case of *P. vigilans*) is very weak as well as wavering and close to the ground. They bask on stones and on the bare earth, and only occasionally seem to visit flowers.

8. (1.) Pseudonympha Hyperbius (Linnæus).

Papilio Hyperbius, Linn., Mus. Lud. Ulr. Reg., p. 257, n. 76 (1764); and Syst. Nat., i. 2, p. 769, n. 130 (1767).
♀ *Papilio Hyperbius*, Cram., Pap. Exot., ii. pl. clxviii. ff. E, F. (1779).
Papilio Hyperbius, Wulfen, Descr. Capens. Ins., p. 32, n. 31 (1786).
Pseudonympha Hyperbius, Wallengren, Lep. Rhop. Caffr. in. K. Sv. Vet.-Akad. Handl., 1857, p. 32, n. 3.
Erebia Hyperbius, Trim., Rhop. Afr. Aust., ii. p. 197, n. 111 (1866).

Exp. al., 1 in. 6 lin.—1 in. 9 lin.

Dark-brown, with a violaceous gloss; fore-wing much coloured with deep-fulvous; hind-wing with a small fulvous patch. Fore-wing: fulvous occupies the same space as in *E. Sabacus*, but is not externally dark-edged, nor ever divided into two patches, though its cellular portion is often much obscured in ♂; an apical ocellus, white-bipupillate, and ringed indistinctly with pale ochreous, marks upper portion of fulvous. *Hind-wing:* on median nervules an ill-defined fulvous patch, enclosing two small unipupillate ocelli (one or both often wanting). *Both wings*, but especially hind-wing, clothed with fulvous hairs on basal half. UNDER SIDE.—*Hind-wing, and costa, apex, and hind-margin of fore-wing irrorated with whitish atoms. Fore-wing:* fulvous paler (more regularly extending from base in ♂); from its outer edge beyond ocellus extends to costa a narrow ferruginous streak, sometimes almost obsolete; ring of ocellus more distinct. *Hind-wing:* beyond middle two parallel, rather widely-apart, usually indistinct, ferruginous transverse lines, parallel to hind-margin, between which is a row of inconspicuous whitish dots, two of them representing the ocelli of upper side.

Aberration ♂.—*Fore-wing:* ocellus very small (not larger than those often present in hind-wing), faintly unipupillate, in a very faint ring scarcely distinguishable from contiguous fulvous; adjoining this ocellus and immediately below it (in the *left* fore-wing only) a second, similar, very minute and indistinct ocellus. *Hind-wing:* no ocelli, but a single whitish dot (occasionally found in ordinary examples) on fold beyond extremity of discoidal cell. UNDER SIDE.—Ordinary, except for the very small ocellus in the fore-wing; no trace of the second ocellus in left fore-wing.

Hab.—Cape Town, September 1870.

This is the darkest of the South-African species of *Pseudonympha*, and is, moreover, peculiar in the dense fulvous hair coating the basal area of the wings. The specimens taken by me in Namaqualand in 1873 were considerably smaller than ordinary examples, expanding only 1 in. 4–6 lin.

It is the first of the genus to appear in the spring, in some seasons occurring as early as the end of July, but is not long out, disappearing towards the end of September. It frequents mountain-sides and rocky situations of some elevation, often sitting on large stones, and sometimes on flowers; its flight is very low, feeble, and irregular. About Cape Town it is abundant, but in other western districts I have not noticed many specimens; and to the eastward of the district of Worcester it is not known to occur. I captured the paired sexes near Cape Town on the 9th September 1870.

Localities of *Pseudonympha Hyperbius*.[1]

I. South Africa.
  A. Cape Colony.
    a. Western Districts.—Cape Town. Kalbas Kraal, Cape District. Malmesbury. Piketberg. Ookiep. Springbokfontein and Tweefontein, Namaqualand District. Konstabel's, Worcester District.

9. (2.) **Pseudonympha irrorata** (Trimen).

Erebia irrorata, Trim., Trans. Ent. Soc. Lond., 1873, p. 103, pl. i. f. 2.

Exp. al., (♂) 1 in. 5 lin.; (♀) 1 in. 6–7 lin.

Pale greyish-brown. Fore-wing: a fulvous patch occupies discoidal cell, not rising above it, but extending beyond it and over median nervules to about their middle, as well as below median nervure and its first nervule, but not reaching submedian nervure or quite to base; touching extremity of upper portion of patch, a bipupillate black ocellus in a pale yellowish-grey ring; *costal margin indistinctly hatched with greyish-yellow* from base to beyond middle. *Hind-wing* without markings. UNDER SIDE.—*Hind-wing and costal and apical region, with hind-margin of fore-wing irrorated with greyish-yellow. Fore-wing:* fulvous patch slightly smaller than on upper side; ring of ocellus paler, more distinct. *Hind-wing:* beyond middle a submarginal row of eight ill-defined greyish-yellow spots; preceding fourth spot, and between it and extremity of discoidal cell, a similar spot; an indistinct similar spot near base, between median and submedian nervures; two smaller ones on edge of cell, marking origins of radial and second subcostal nervules; and two or three small ones on costa before middle. *In both wings,* on hind-marginal edge, a row of small, inter-nervular, greyish-yellow spots, more apparent in hind-wing than in fore-wing.

The sexes do not differ, except that the irrorations and spots of the under side of the wings are more conspicuous in the ♀.

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[1] In *Rhopalocera Africæ Australis* (ii. p. 198) I noted that a specimen of *P. Hyperbius* in the British Museum was registered as having been collected in "Afghanistan." No confirmation of this surprising *habitat* has been given; and it is extremely unlikely that the butterfly should occur so far from the known range of its genus.

This species stands nearer to *P. Hyperbius*, Linn., than to any other South-African *Pseudonympha;* but it differs from the latter in its much paler colouring throughout, its total want of any ocelli or fulvous colouring on the upper side of the hind-wings (in which respect it is like *P. Narycia*, Wallengren), its hatching of greyish-yellow on the upper side of the costa of the fore-wings, its much yellower and more distinct under-side hatching and irroration, and its want of the two transverse ferruginous striæ on the under side of the hind-wings.

Colonel Bowker discovered this species in the Uitenhage District in August 1870; and in July 1872 he sent an example from the District of Albert. In the latter year Mrs. Barber forwarded a specimen captured by her in the Stormbergen, forming the southern boundary of the Albert District.

It was not until January 1876 that the butterfly was recorded from the Western Districts, owing to my taking two individuals at the village of Robertson; and a few years afterwards (September 1879) I met with a solitary specimen at Malmesbury, about thirty miles north of Cape Town. These examples occurred only singly, flitting about stony spots, and looked on the wing like rather faded *P. Hyperbius.*

Localities of *Pseudonympha irrorata.*

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Malmesbury. Robertson.
    b. Eastern Districts.—Zwaarte Ruggens, Uitenhage District (*J. H. Bowker*). Stormbergen (*M. E. Barber*). North of Albert District (J. H. Bowker). Burghersdorp, Albert District (*D. R. Kannemeyer*).

10. (3.) **Pseudonympha Narycia** (Wallengren).

Pseudonympha Narycia, Wallgrn., K. Sv. Vet.-Akad. Handl., 1857, Lep. Rhop. Caffr., p. 32, n. 4.

♀ *Erebia Narycia*, Trim., Trans. Ent. Soc. Lond., 1870, p. 350, pl. vi. f. 1.

Exp. al., 1 in. $5\frac{1}{2}$–8 lin.

Pale-brown, inclining to grey; in fore-wing a well-defined discal patch of fulvous; hind-wing wholly without marking. Fore-wing: apical ocellus rather large, very distinct, black, with two small silvery-white pupils, and in a very pale-yellowish ring outwardly edged with fuscous; fulvous patch beginning near extremity of discoidal cell, extending as far as inner and beyond lower edge of ring of ocellus, not rising above first radial nervule, or descending quite as far as submedian nervure; a rather indistinct submarginal dark streak from costa bounding the even outer edge of fulvous patch. UNDER SIDE.—*Very similar to upper side, but hind-wing with a discal series of five very distinct ocelli. Fore-wing:* fulvous patch slightly smaller, being straighter along its inner edge; submarginal dark streak more distinct than on upper side. *Hind-wing:* series of ocelli sharply angulated on third median nervule,—first ocellus (between subcostal nervules) almost always considerably larger than the rest,—second ocellus usually smaller than the others (except sometimes the last), and occasionally blind; all ocelli very clearly defined, unipupillate with silvery-white, and in dark-edged pale-yellowish rings; about middle an indistinct, irregular, dark, transverse streak, and beyond ocelli a similar but regular and darker streak, more or less suffused with fulvous in its upper portion; at base, for a little distance along costa, a pale-fulvous edging (in ♀ this is wider and deeper in colour, and there is a similar second basal marking extending on inner margin). In both wings a dark line, followed by a pale one, immediately before hind-margin.

Except in the character just mentioned, the ♀ only differs from the ♂ in being slightly paler, and having the hind-wing ocelli larger, and the fulvous suffusion of the outer dark streak more pronounced.

The fifth ocellus on the under side of hind-wing is rarely in both sexes bipupillate.

A ♀ taken by Mr. W. Morant near Pretoria, in the Transvaal, not only presents the character last named, but has the second ocellus immediately surmounted by a very minute blind ocellus, and also exhibits the remarkable peculiarity of the ocellus of the fore-wing being tripupillate on the upper side, and respectively quadri-pupillate (right) and quinque-pupillate (left) on the under side. A ♂ from Potchefstroom has the fore-wing ocellus tripupillate both above and below, while a ♂ from Basutoland has it bipupillate above and tripupillate below.[1]

The small size and pale ground-colour of this species, and its very distinct yellowish-ringed ocellus of the fore-wings, give it something of the aspect of *P. Cassius* (Godt.), but the perfectly unmarked upper side of the hind-wings, no less than their very conspicuous under side series of ocelli, at once characterise it as altogether another butterfly. All the other *Pseudonymphæ* have ocelli or a fulvous patch (or both) on the upper side of the hind-wings,—even *P. Neita*, Wallengr., the nearest ally of *Narycia*, presents some red-ringed ocelli.

This insect seems confined to elevated country in the interior of South Africa. In Basutoland, Colonel Bowker reports it as occurring "all over the country, on high hills and rocks." It occurs as far north as Pretoria in the Transvaal; and in the Orange Free State, Mr. C. Hart, who sent me some examples, found it "common in January 1871." I have not heard of its having been found to the south of the Orange River.

Localities of *Pseudonympha Narycia.*

- I. South Africa.
  - B. Cape Colony.
    - *d.* Basutoland.—Maseru, Maluti Mountains, &c. (*J. H. Bowker*).
  - C. Orange Free State.—Special locality not recorded (*C. Hart*).
  - K. Transvaal.—Potchefstroom District (*T. Ayres*). Pretoria (*W. Morant*).

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[1] In these cases of more than two pupils, it is remarkable that there is no indication of additional ocelli having been incorporated in the ordinary one,—as is so often noticeable in the *Satyrinæ*.

11. (4.) **Pseudonympha Neita** (Wallengren).

PLATE 7, fig. 2, ♂.

Pseudonympha Neita, Wallgrn., K. Vet.-Akad. Förhandl., 1875, p. 84, n. 3.
Erebia Narycia, Trim., Rhop. Afr. Aust., ii. p. 198, n. 112 (1866).

Exp. al., 1 in. 7 lin.—2 in.

Dull-brown. Fore-wing: a large subquadrate fulvous patch on disc, commencing immediately beyond discoidal cell, leaving a broad border of ground-colour bounding it on each margin of wing, and half enclosing in its upper exterior portion a black, white-bipupillate ocellus in a paler fulvous ring. *Hind-wing:* beyond middle, between first and third median nervules, two similar (but unipupillate) ocelli, which are more conspicuous in ♀, and of which the superior one is the larger; the pale fulvous rings of these ocelli, and especially that of the upper one, often suffused. UNDER SIDE.—Slightly paler; markings very distinct. *Fore-wing:* fulvous defined inwardly and outwardly by a line darker than ground-colour, the outer line dentate in ♀; iris of ocellus ochreous, ringed with dark-brown. *Hind-wing: costa at base tinged with fulvous* (in ♀ some indistinct fulvous tinting along inner margin); beyond middle a most indistinct fascia, slightly paler than ground-colour, containing four ocelli like that in fore-wing, of which the two wanting on upper side are respectively between first and second subcostal nervules and first median nervule and submedian nervure, the latter being bipupillate.

Wallengren (*loc. cit.*) notes a ♀ from Potchefstroom, in the Transvaal, which has on upper side of hind-wing two fulvous spots in place of the ocelli.

Before seeing the typical *Narycia* from the interior country, I took this larger, darker form from the Eastern Coast districts for it. Good distinguishing characters, irrespective of size, are the more restricted area of the fulvous patch in the fore-wing, which does not intrude on the discoidal cell, and the presence of ocelli in more or less suffused fulvous rings on the upper side of the hind-wing. On the under side of the hind-wing there are only four ocelli, that which in *Narycia* is the second of a series of five being always wanting in *Neita*. Specimens taken by myself near Greytown, Natal, and others found in the Transvaal by Mr. W. Morant and Mr. T. Ayres, are smaller and paler than the Kaffrarian examples, but present the distinguishing characters noted. One ♂ of those I captured has the costal ocellus of the hind-wing distinctly represented on the upper side; while another ♂ received from Mr. Morant has that ocellus faintly, and the fourth (near anal angle) pretty clearly shown on the upper side.

I met with this butterfly rather sparingly in grassy places near Greytown in March 1867. There was nothing in its flight or appearance distinguishing it from its congeners. Wallengren notes that Mr. N. Person found it not uncommonly in similar country near Potchefstroom during February.

Localities of *Pseudonympha Neita*.

I. South Africa.
    D. Kaffraria Proper.—Tsomo and Bashee Rivers (*J. H. Bowker*).
    E. Natal.
        b. Upper Districts.—Greytown. Estcourt (*J. M. Hutchinson*).
    K. Transvaal.—Potchefstroom (*W. Morant* and *T. Ayres*).

12. (5.) Pseudonympha D'Urbani, *sp. nov.*

Exp. al., 1 in. 8–10 lin.

Dull-brown; a subquadrate discal fulvous patch and rather small black, white-bipupillate ocellus in fore-wing; two indistinct (sometimes obsolete) minute unipupillate fulvous-ringed ocelli in hind-wing. Fore-wing: fulvous patch small, clearly defined, even on both edges,—reaching superiorly as far as dull-yellowish ring of ocellus along inner and lower edge, and inferiorly to a little below first median nervule,—not infringing on discoidal cell; *along median nervure a more or less distinct suffused fulvous streak. Hind-wing:* ocelli between first and third median nervules, the upper one usually a little larger, and with its fulvous ring suffused. UNDER SIDE.—*Fore-wing:* outer edge of fulvous patch bounded by a dentated dark-brown streak, commencing close to costa; in some examples the discoidal cell presents, a little beyond its middle, a faint, transverse, fulvous mark. *Hind-wing:* three dark-brown irregular transverse streaks—one before, one about, and the third beyond, middle; between the central and outer streaks the ground-colour is paler, forming a broad fascia, marked exteriorly with four minute but well-defined unipupillate, black, yellow-ringed ocelli, of which the first is between the two subcostal nervules and the others in a row between third median nervule and submedian nervure; these ocelli very finely encircled exteriorly with dark-brown.

This *Pseudonympha* is nearly related to *P. Neita*, Wallengr., but is easily distinguished by *its total want on the under side of the hind-wings of any basal fulvous, and its possession of a quite distinct pale discal fascia, and of a third (pre-median) dark transverse streak.* On the upper side as well as on the under side all the ocelli are smaller, and in much duller rings, especially those of the hind-wings.

Mr. W. S. M. D'Urban, F.L.S., late curator of the Exeter Museum, discovered males of this butterfly at King William's Town and Bodiam, in the colony of British Kaffraria, in the year 1861; and it gives me great pleasure to name the species in his honour. It was not until 1870 that I saw three other ♂ examples, which were taken by Mrs. Barber, two near Grahamstown and the other at King William's Town; and in 1872 Colonel Bowker sent a ♂ and two ♀ from the Albert District in the north-east of Cape Colony. No other specimens have come under my notice.

Localities of *Pseudonympha D'Urbani.*

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—Grahamstown (*M. E. Barber*). King William's Town (*W. S. M. D'Urban* and *M. E. Barber*). North of Albert District (*J. H. Bowker*).

13. (6.) **Pseudonympha Natalii,** (Boisduval).

Satyrus Natalii, Boisd., App. Voy. de Deleg., p. 594, n. 84 (1847).
Erebia Natalii, Trim., Rhop. Afr. Aust., ii. p. 203, n. 116 (1866).
Pseudonympha Natalii, Butl., Cat. Sat. Brit. Mus., p. 94 (1868).

Exp. al., 1 in. 7–9 lin.

Very pale greyish-brown; in both wings a pale fulvous-ochreous discal patch,—that of fore-wing enclosing subapical ocellus. Fore-wing: fulvous-ochreous patch large, edged throughout with a streak darker than the general greyish-brown ground-colour, lying between subcostal and submedian nervures, its inner edge at or not much beyond extremity of discoidal cell superiorly,—its outer edge running parallel to hind-margin; ocellus subovate, rather oblique, bipupillate with white, in a wide and distinct ochre-yellow ring, outwardly vaguely circled with a dark shade of rufous, and superiorly completely but narrowly enclosed by fulvous-ochreous patch; a thin dark streak just before hind-margin. *Hind-wing:* fulvous-ochreous patch ill-defined superiorly about radial nervule, reaching inferiorly to a little below first median nervule, internally bounded by a rather faint, externally by a very distinct dark line; enclosed by the patch, between first and third median nervules, two small ocelli like that of fore-wing, but unipupillate and with a less distinct yellow ring; in one example the upper of these ocelli is almost obsolete, and there is a third inferior equally obsolescent ocellus; close to costa, not far before apex, a similar but larger obsolescent ocellus; submarginal streak as in fore-wing. UNDER SIDE.—*Fore-wing:* like upper side, but streak edging fulvous patch and submarginal streak *ferruginous;* fulvous obsolescent about superior part of ocellus; outer dark circle of ocellus more distinct, tinged with ferruginous. *Hind-wing:* brown, not so greyish in tint as that of fore-wing; a dull ferruginous border on costa at and near base; before middle a rather indistinct, interrupted, transverse ferruginous stria; about middle a well-defined, similar, but quite continuous and more or less angulated stria from costa to submedian nervure; four ocelli of moderate size, very distinct, all unipupillate, the largest that near apex; of the others that nearest anal angle is the smallest; a little beyond ocelli *a ferruginous stria, which, between second subcostal and third median nervules, forms two very abrupt and deep inter-nervular loops;* the end of the lower loop encloses a minute fifth ocellus (obsolescent on left side in one example); streak close to hind-margin distinct, ferruginous.

Boisduval does not, in his description cited, mention the very singular double looping of the stria just beyond the ocelli on the under side of the hind-wing, but the characters he notes of the rather large fulvous patch in both wings marked with the ocelli, and the brown under side of the hind-wing crossed by two transverse ferruginous striæ before the ocelli, are combined in no other *Pseudonympha*, and enable me to identify with *P. Natalii* the specimens above described. The same author observes that he was acquainted with the ♀ only; and the two examples from which my description is made both appear to be of that sex, but one has lost the abdomen and is otherwise injured. The most striking distinctive features of this rare species are those specially noticed, viz., on the upper side (1) the complete enclosure of the ocellus of fore-wing in the fulvous patch, and (2) the exceptionally large extent of the fulvous patch in the hind-wing; and on the under side (3) the two transverse ferruginous stria before the ocelli of the hind-wing, and (4) the extraordinary looping of the stria just beyond them. Apart from these distinctions, *Natalii* on the whole resembles *P. Narycia* and *Neita*, Wallengr., more nearly than any others of the genus yet described;[1] but in the first and fourth features just mentioned it stands quite alone.

Beyond the solitary much-injured specimen from Damaraland noted by me (*loc. cit.*) in 1866, I have seen only three examples of this butterfly, viz., one taken in 1875 by Mr. F. W. Barber on the N.W. border of the Transvaal; another found on the Tati River in 1882 by Mr. F. C. Selous; and the third in the collection brought from Matabeleland by Mr. Jamieson in 1881. Only the first of these three localities is south of the Tropic.

Localities of *Pseudonympha Natalii.*

- I. South Africa.
    - F. "Zululand (*Delegorgue*)."—Boisduval.
    - K. Transvaal.—Crocodile River, S. of Shoshong (*F. W. Barber*).
- II. Other African Regions.
    - A. South Tropical.
        - *a.* Western Coast.—Damaraland (*J. A. Bell*).
        - *b*1. Eastern Interior.—Tati River (*F. C. Selous*). Matabeleland (*Jamieson*).

14. (7.) **Pseudonympha Hippia,** (Cramer).

Papilio Hippia, Cram., Pap. Exot., iii. pl. ccxxii. ff. C, D (1782).
? *Papilio* (*Hipparchia*) *montana*, Burchell, Travels Int. S. Afr., i. p. 45, note and woodcut (1822).
Satyrus Cassius, ♀, Godt., Enc. Meth., ix. p. 526, n. 134 (1819).

Exp. al., (♂) 1 in. 7 lin.; (♀) 1 in. 9 lin.

♂ *Dull greyish-brown; discoidal cell and a space beyond and below it in fore-wing, and lower part of cell and wide space over median nervules beyond and below it in hind-wing, very deep obscure-fulvous. Fore-wing:* apical ocellus of moderate size, its two bluish-white pupils large and conspicuous, its outer ring of pale-brownish suffused and indistinct;

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[1] In Mr. Selous's collection from the Tropical Interior of South Africa there are several examples of a much closer ally of *Natalii.* This form is larger, has the fulvous patch in both wings much smaller, and on the under side of the hind-wings wants the stria before middle, and has that beyond the ocelli unlooped.

obscure-fulvous area very ill-defined, barely attaining outer ring of ocellus, but descending as far as submedian nervure. *Hind-wing:* obscure-fulvous area only occupying lower and outer half of cell, but extending beyond over median nervules (and a little above and below them) to not far from hind-margin. UNDER SIDE.—*Hind-wing hoary, closely speckled with brown; a little beyond middle, a well-defined, irregular, rather bluntly dentate, dark-brown transverse streak. Fore-wing:* fulvous much paler and better defined; apex paler than rest of margin and speckled with brown. *Hind-wing:* costa marked with some very small fuscous spots; before middle, a very indistinct, irregular, interrupted transverse dark-brown streak; streak beyond middle most strongly dentate in its median portion; not far from hind-margin, two minute black white-unipupillate ocelli, one between subcostal nervules, the other between first and second median nervules.

♀ *Fulvous in both wings paler, better defined. Fore-wing:* apical ocellus considerably larger, its pale outer ring better defined. *Hind-wing:* a very minute ocellus, with a white centre between first and second median nervules. UNDER SIDE.—As in ♂, but the hind-wing with coarser mottling, inclining to striolation, with the streak before middle almost obsolete, and that beyond middle less distinct and rather suffused.

Burchell's very brief diagnosis leaves it doubtful whether his *Montana* is identical with Cramer's species, but his rough woodcut of the upper side (though it gives two small ocelli near the anal angle of the hind-wings instead of one) evidently depicts the fulvous area in both wings as occupying the same spaces; and this character (coupled with the conspicuous dark-brown streak beyond the middle on the under side of the hind-wings) affords the best distinction of the true *Hippia*, the area in question being so much larger (especially in the fore-wing, where it extends almost to the base) than in the nearly-allied *P. vigilans*, Trim.

I have seen but two examples (a ♂ and a ♀) which are strictly referable to the *Hippia* of Cramer,—the numerous specimens mentioned under that name in *Rhopalocera Africæ Australis* being, I am now of opinion, of a different though very closely-related species.

These two examples were captured by myself near Cape Town, on the summit of the southern part of the Table Mountain range, in February 1864 and January 1865. Dr. Burchell's insect is also noted as having been taken on the summit of the eastern side of Table Mountain on the 24th January 1811.

Locality of *Pseudonympha Hippia*.

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Cape Town.

15. (8.) **Pseudonympha vigilans**, *sp. nov.*

Erebia Hippia, Trimen, Rhop. Afr. Aust., ii. p. 199, n. 113 (1866).

Exp. al., 1 in. 7 lin.—2 in.

♂. *Pale, dull, greyish-brown; in each wing a small post-median deep-fulvous patch,—in fore-wing slightly intruding on outer part of discoidal cell, in hind-wing wholly beyond it. Fore-wing:* black apical ocellus large, bipupillate with bluish-white (the upper pupil the larger), in a rather ill-defined yellowish-grey ring; fulvous patch rather elongated transversely, lying between second radial and first median nervules, and not extending as far as ring of ocellus,—its outline somewhat rounded. *Hind-wing:* fulvous patch smaller and more rounded than that of fore-wing, scarcely rising above third, and not quite descending to first median nervule. UNDER SIDE.—*Costa and apex of fore-wing and whole of hind-wing grey, with brown hatchings or short striolæ.*[1] *Fore-wing: fulvous patch very much enlarged inwardly, extending uninterruptedly to base;* ring of ocellus better defined, outwardly edged with brown throughout. *Hind-wing:* costal, apical, and upper hind-marginal area usually tinged with brownish, making the striolæ there less apparent; sometimes a small unipupillate, black, yellowish-ringed ocellus near hind-margin, between first and second median nervules, and sometimes also a similar, larger, subapical ocellus between the subcostal nervules.

♀. *Paler, especially the fulvous patches*, of which that in fore-wing is rounder and intruding more on discoidal cell. *Hind-wing:* rarely a single indistinct small ocellus between first and second median nervules.[2]

As a rule, specimens from the Cape Peninsula (Cape Town to Simon's Town) have no ocelli on the under side of the hind-wings; the ♀ occasionally, and the ♂ very rarely, presents a minute one between first and second median nervules, but the subapical ocellus seems to be always wanting. It is probable that this form prevails through the greater part of the Colony, as the examples I met with near Grahamstown were quite like those found in the Cape District. But farther to the east and north-east it is common to find specimens in which both ocelli (and especially the subapical one) are more or less well marked. This character is, however, most variable; for instance, among nineteen Basutoland examples collected by Colonel Bowker, five (including two ♀) exhibit no trace of the subapical ocellus; one has the ocellus very small; five present it small but distinct; two (♂ and ♀) possess it of a moderate size; in five it is large; and one (a ♂) has it very large and conspicuous. Besides this tendency to the development of the subapical ocellus, the specimens in question exhibit a browner under side of the hind-wing, owing to the more general and pronounced striolation; and on the upper side of the fore-wing the fulvous patch presents an extension in the direction of the base, especially in the ♀, where it sometimes occupies rather over the outer third of the discoidal cell.

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[1] In some Natalian and Transvaalian specimens of both sexes there are distinctly *fulvous* striolæ mixed with the brown ones, and two imperfect series of these, forming a median and a submarginal streak, are specially noticeable. This peculiarity is much developed in two small ♂s taken by Colonel Bowker near the sources of St. John's River, in the mountainous country on the border between Kafirland and Natal.

[2] In two ♂s taken at Burghersdorp by Dr. Kannemeyer in 1883, this ocellus is well marked on both sides of the wing, and one of them very nearly equals in size (on the under side) the subapical ocellus, which is itself unusually large. In the other ♂ this subapical ocellus is quite distinct, though of small size, on the upper side.

From its very near ally, *P. Hippia*, Cram., this species is distinguished by its *paler ground-colour*, and *paler, much smaller, fulvous patches on the upper side* in both wings, and by the *total absence of the dentated dark transverse streak beyond the middle on the under side* of the hind-wing.

This *Pseudonympha* haunts broken and rocky ground in elevated situations, but is also to be found sometimes at lower levels near mountains and stony hillsides. It is not uncommon on and about Table Mountain, and I have twice taken it flitting about the Museum enclosure in Cape Town. Its flight is extremely wavering and irregular, though weak and near the ground, and it is fond of settling on stones or on the soil. On the 4th April 1872 I took the paired sexes near the summit of the Lion's Head Mountain. The butterfly appears in the months of September and October, but I once met with it towards the end of August. It is, however, more numerous near Cape Town in March and April, and it was in March that I found it sparingly in Natal. Near Grahamstown I took it pretty commonly at the end of January and in February.

Localities of *Pseudonympha vigilans*.

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Cape Town. Constantia, Muizenberg, Kalk Bay, Simon's Town, Cape District. Genadendal, Caledon District (*G. Hettarsch*). Worcester.
    b. Eastern Districts.—Grahamstown. King William's Town (*W. S. M. D'Urban*). Stormberg (*M. E. Barber*). Burghersdorp, Albert District (*D. R. Kannemeyer*).
  D. Kaffraria Proper.—Heads of St. John's River (*J. H. Bowker*).
  E. Natal.
    b. Upper Districts.—Noodsberg. Greytown. Estcourt (*J. M. Hutchinson*). Biggarsberg and Rorke's Drift (*J. H. Bowker*).
    d. Basutoland. Maseru and Koro-Koro (*J. H. Bowker*).
  F. Zululand.—Isandlhwana and Napoleon Valley (*J. H. Bowker*).
  K. Transvaal.—Potchefstroom and Lydenburg Districts (*T. Ayres*). Pretoria (*W. Morant*).

16. (9.) **Pseudonympha Sabacus**, (Trimen).

Erebia Sabacus, Trim., Rhop. Afr. Aust., ii. p. 200, n. 114, pl. 4, f. 1 (1866).
Pseudonympha Sabacus, Butl., Cat. Sat. Brit. Mus., p. 93 (1868).
Pseudonympha Hippia,[1] Wallengr., K. Sv. Vet.-Akad. Handl., 1857, Lep. Rhop. Caffr., p. 32, n. 1.

Exp. al., (♂) 1 in. 6–8½ lin.; (♀) 1 in. 4–8 lin.

Greyish-brown; fore-wing with a disco-cellular and discal deep fulvous patch, extending up to lower half of subapical ocellus; hind-wing with two small ocelli in confluent fulvous rings near lower half of hind-

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[1] Among the typical examples of Wahlberg's butterflies, kindly forwarded to me from the Stockholm Museum by Mr. Aurivillius, was "P. Hippia, Wallengren, ♂," which turned out to be a small ♀ of *P. Sabacus*, mihi.

margin. Fore-wing: a deep fulvous patch occupies, and sometimes extends a little below, discoidal cell, and is usually confluent at insertion of median nervules with a larger patch of the same colour, lying between fifth subcostal and third median nervules, and defined, partly internally and wholly externally, with a line of dark-brown, the external line commencing on costa and slightly inclining inwards as far as first median nervule; black apical ocellus touching outer fulvous, ovate, bipupillate with bluish, and with an incomplete, indistinct, yellowish-grey ring. *Hind-wing:* an indistinct dark-brown line near and parallel to hind-margin; touching its inner edge, between first and third median nervules, a small fulvous patch, enclosing two small, black, white unipupillate ocelli, very variable in size, and all but obsolete in some examples. UNDER SIDE.—*Costal and apical area of fore-wing* indistinctly, *whole of hind-wing* conspicuously, *whitish-grey*, hatched with short dark-brown lines. *Fore-wing:* fulvous paler, the two patches more completely confluent, but the inner brown edging of the outer patch often well-marked; ring of ocellus more distinct and complete. *Hind-wing: three irregular, transverse, brown streaks,*—one crossing cell between middle and base, occasionally rather indistinct,—one median, much zigzagged, always strongly marked,—the third regularly dentate, near hind-margin, sometimes a good deal obscured by the brown hatching, which is densest along hind-margin; between median and outer streak (but nearer the latter) three ocelli, usually with suffused brownish clouding, two answering to those on upper side, the third between two subcostal nervules; the latter ocellus often, and all three occasionally, quite wanting.

This species differs from *P. vigilans*, Trim., in its double fulvous patch, much smaller, incompletely-ringed ocellus, and dark-brown line of fore-wing, and much smaller fulvous marking of hind-wing; and beneath, in its triple-streaked whiter hind-wing. The antennæ have a more slender, gradually-formed club, and are much more conspicuously white-ringed, especially beneath. The ♀s as a rule are smaller than the ♂s, and the fine dark-brown striolæ are much closer and more evenly distributed all over the hind-wing.

VAR. A. (♂ and ♀).

Larger (*exp. al.*, 1 in. 8–10 lin.) *Fore-wing:* ocellus proportionately smaller. *Hind-wing:* ocelli larger, but their fulvous rings narrow, not confluent. UNDER SIDE.—*Hind-wing:* whiter, shining; the first and second transverse brown streaks strongly marked, and so clouded with brownish (the first exteriorly and the second interiorly) as to form a median irregular fascia, more or less white mesially; the third (submarginal) streak better marked, more dentate, usually interrupted with white on the nervules; ocelli very much larger (their pupil often obsolete) and the suffused brown clouding surrounding them much darker and broader; in some examples, a minute additional ocellus close to anal angle.

Hab.—Eastern South Africa.

VAR. B. (♂).

Same size as Var. A. *Fore-wing:* cellular fulvous very much reduced (in two examples barely visible). *Hind-wing:* subapical ocellus of under side reproduced in three out of four examples; two lower ocelli large, well-defined, with a very distinct bluish pupil, and set in moderately wide fulvous rings; accompanying them an additional smaller ocellus between radial and third median nervules. UNDER SIDE.—*Fore-wing:* fulvous field as usual; apical white reduced to a short streak between brown transverse line and ring of ocellus; on apex, some fulvous scaling. *Hind-wing:* the four ocelli and (in three examples) a fifth minute anal-angular one very distinct, and in evident rings paler than the restricted pale-brown clouding surrounding them; fulvous scaling marks the clouding of all the three transverse dark-brown streaks, of which the outer (submarginal) one is much less dentate than in Var. A.

Hab.—Natal. In the collection of R. Trimen.

With this last-described variety I am disposed to associate three ♀ specimens taken by Colonel Bowker at the heads of the Kraai River, in the Aliwal North District of the Cape Colony. In the rather better development of the cellular fulvous of the fore-wing, and in the fewer, less distinct ocelli of the hind-wing on the upper side, they approach Variety A.; but the under side, though duller, in its colouring and the hind-wing ocelli nearly resembles that of the ♂ Variety B.

This is an exceedingly abundant species in open country all through the coast districts of the Colony. The typical form swarms on the sandy flats near Cape Town in October and November, and occurs as late as the middle of May. I found it equally plentiful at Knysna during the summer months. It extends to Uitenhage and to Grahamstown, occurring near the latter place during my visit in January 1870. I do not know the exact eastern limit of the typical form, or whether it occurs in some districts in company with Variety A.; but the latter prevails in the Trans-Kei District of Kaffraria Proper, and seems altogether to replace the typical *Sabacus* in the interior of Natal, where I found it in great numbers in the summer of 1867. Variety B. was only met with near Greytown and in the Great Noodsberg, but I captured Variety A. also in those localities. Everywhere, both as regards the typical form and the Variety A., females are very rarely taken among the very numerous males.

Localities of *Pseudonympha Sabacus.*

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Cape Town. Blaauwberg, Cape District. Eerste River, Stellenbosch District. Paarl. Bain's Kloof, Worcester District. Mossel Bay. Knysna. Plettenberg Bay.
    b. Eastern Districts.—Grahamstown. Uitenhage (*S. D. Bairstow*). Coega River (*J. H. Bowker*). Windvogelberg (*Dr. Batho*). Stormbergen (*Mrs. Barber.—Var.* A.) North of Albert District (*J. H. Bowker.—Var.* A.) East London (*P. Borcherds.—Var.* A.)
    d. Basutoland.—Maluti Mountains (*J. H. Bowker.—Var.* A.)
  D. Kaffraria Proper.—Butterworth and Bashee River (*J. H. Bowker.—Var.* A.)

E. Natal.
  b. Upper Districts.—Udland's Mission Station.—(*Var.* A.) Tunjumbili.—(*Var.* A.) Hermansburg.—(*Var.* A.) Greytown.—(*Vars.* A. and B.) Great Noodsberg.—(*Vars.* A. and B.) Little Noodsberg.—(*Var.* A.) Karkloof (*J. H. Bowker.—Var.* A.)
K. Transvaal.—Lydenburg District (*T. Ayres.—Var.* A.)

17. (10.) **Pseudonympha Trimenii,** Butler.

Pseudonympha Trimenii, Butler, Cat. Sat. Brit. Mus., p. 94, n. 6 (1868).
Erebia Sabacus, Var. A., Trim., Rhop. Afr. Aust., ii. p. 201, pl. 4, f. 2 (1866).
Pseudonympha Sabacus and *P. Trimenii*, Trim., Trans. Ent. Soc. Lond., 1868, p. 284.

Exp. al., 1 in. 6½–8½ lin.

Rather dark-brown, with two small, well-separated, deep fulvous patches in fore-wing; entire neuration of under side of hind-wing white. Fore-wing: in discoidal cell, a small fulvous patch, not extending beyond origin of second median nervule, bounded exteriorly by a rather indistinct slightly angulated fuscous line; beyond cell a larger, upper-discal fulvous patch, bounded everywhere but superiorly by a well-defined fuscous line; subapical ocellus of moderate size or rather small, directly touching fulvous interiorly, but with a very indistinct yellowish-grey half-ring exteriorly. *Hind-wing:* a slightly sinuate submarginal fuscous line; before it, between radial and first submedian nervules, three small ocelli, of which the middle one, and to a less extent the lowest, are ringed with broadly suffused fulvous. UNDER SIDE.—*Fore-wing:* edge of costa before middle, costal nervure at base, and terminal portion of nervules at and near (below) apex white; two fulvous patches united into one long field, paler than above, but the fuscous bounding lines quite as well marked as on upper side; ring of ocellus faintly indicated interiorly. *Hind-wing:* besides the entire neuration, a fine costal edging line, a fine line at base of hind-marginal cilia, the hairs edging inner margin, a bifurcate longitudinal streak in discoidal cell, and a longitudinal streak from base to near anal angle above and parallel to submedian nervure, are all white; ground-colour pale greyish-brown, irregularly and sparsely freckled with dark-brown short lineolæ, especially near base and margins; three transverse fuscous streaks interrupted by white neuration,—that before middle rather sharply angulated, that about middle sinuated irregularly, and that beyond middle slightly but regularly dentated; space between middle and outer streak whitish, and containing near its external edge a row of five or six more or less distinct very small ocelli in faint yellowish-grey rings surrounded by brownish.

The fulvous markings of the upper side, especially the disco-cellular one in the fore-wing, are in some specimens much reduced and suffused.

VAR. A. (♂ and ♀).

♂ *Fore-wing:* dusky, suffused; cellular patch only indicated by a fulvous gloss; outer patch paler, wider, without bounding fuscous line; ocellus larger, but its two pupils indistinct. *Hind-wing:* five ocelli, all apparent, the fulvous surrounding the two lowest expanded into a good-sized patch. UNDER SIDE.—Duller. *Hind-wing:* neuration not so white before middle; ocelli with barely perceptible pupils; whitish clouding sparse and less extensive.

♀ like ♂ in most respects, but cellular fulvous of fore-wing on upper side well developed and united to that beyond middle as on under side.

Hab.—? British Kaffraria.

This is a close ally of *P. Sabacus*, mihi, and, while one example only was known to me, I was disposed to regard it as a variety, or perhaps a mere individual aberration, of that species. But having since taken specimens of both sexes in three different localities, and found the differences constant, I think that Mr. Butler rightly separated it from its near congener. The conspicuous white neuration of the under side at once distinguishes *Trimenii* from its near congeners, and the constancy of the unbroken row of five (rarely six) ocelli on the under side of the hind-wing is also a very characteristic feature.

The variety noted was taken by Mr. (now Colonel) Bowker in the year 1868, and sent by him to the South-African Museum while I was absent from the Colony. Both specimens were unfortunately much broken; and Mr. Layard, at that time curator of the Museum, could not tell me their precise locality, but believed it was some part of British Kaffraria.

P. Trimenii has quite the habits and appearance on the wing of the widely-distributed and abundant *P. Sabacus*, but seems to be extremely local. On Table Mountain I have met with it haunting a small tract at a considerable elevation, where I did not find any *Sabacus*, and it was not uncommon, under the same conditions, near Simon's Town; but on another occasion, near Eerste River, in the Stellenbosch District, I found *Trimenii* in quite a lowland station, —a few specimens flying among swarms of *Sabacus* which enlivened the spot. It is on the wing in September and October.

Localities of *Pseudonympha Trimenii*.

- I. South Africa.
  - B. Cape Colony.
    - *a.* Western Districts.—Cape Town. Simon's Town. Eerste River, Stellenbosch District.
    - *b.* Eastern Districts.—? British Kaffraria (*J. H. Bowker*).

18. (11.) **Pseudonympha Cassius**, (Godart).

Papilio Hyperbius, ♂, Cram., Pap. Exot., ii. p. clxviii. ff. C, D (1779).
Satyrus Cassius, Godt. [part], Enc. Meth., ix. p. 526, n. 134 (1819).
Pseudonympha hyperbioides, Wallengr., K. Sv. Vet.-Akad. Handl., 1857, Lep. Rhop. Caffr., p. 32, n. 2.
Erebia Cassius, Trim., Rhop. Afr. Aust., ii. p. 202, n. 115 (1866).

Exp. al., 1 in. 3–7 lin.

Grey-brown. Fore-wing: a brick-red, ill-defined central patch, variable in size, on median nervure and nervules, and occupying outer lower portion of discoidal cell; beyond it, two transverse streaks darker than ground-colour,—the first not extending below red patch, the other, which is near hind-margin, extending from near costa to near inner margin; between the two streaks, near costa, a large, nearly circular, black ocellus, yellow-ringed and bipupillate with blue. *Hind-wing:* outer transverse streak as in fore-wing; two small ocelli near hind-margin towards anal angle, coloured as in fore-wing, but unipupillate, —the ocellus nearer anal angle smaller than the other. UNDER SIDE.—Paler; hind-margin near *apex of fore-wing and whole of hind-wing,* more or less closely *hatched with numerous short, thin, red-brown lines. Fore-wing:* brick-red patch larger, almost filling discoidal cell; ocellus and transverse streaks more distinctly marked. *Hind-wing:* two angulated, transverse, reddish-brown streaks, one before, the other about middle; hind-margin densely hatched with red-brown lines; only the smaller ocellus visible near anal angle, and that very minute; another small ocellus between subcostal nervules, close to apex; sometimes one or two white dots, representing additional ocelli, between the two ocelli mentioned; in some specimens the whole hind-wing is so densely hatched that the two transverse streaks are inconspicuous.

A ♂ specimen from Knysna in my collection has in both fore-wings a minute ocellus adjoining the lower extremity of the ordinary large ocellus; and there is an additional ocellus in the hind-wings, smaller and more towards costa than the two ordinary ones.

In a ♀ example from the same locality, the small ocellus on under-side of hind-wing, near apex, is also distinct on the upper surface of the wing; while in another ♀, taken at Forest Hall, near Plettenburg Bay, by Mr. W. H. Newdigate, the fore-wings bear, in addition to the small ocellus adjoining the ordinary large one, a further small ocellus between first and second median nervules.

The remarkable distinctness of the yellow rings of all the ocelli is characteristic of this *Pseudonympha,* and the ocelli of the hind-wing are on the upper side unusually large, and without any vestige of fulvous round them. The under side of the hind-wing is quite devoid of the white clouding so characteristic of *P. Sabacus,* Trim., and *P. Trimenii,* Butler; and the minuteness of its ocelli and vague definition of its transverse striæ recall the same surface in *P. vigilans,* Trim.

P. Cassius is very common and of general distribution in Southern Africa, and probably occurs throughout the year, as June and July are the only months during which I have not observed it. As usual with the species of this group, the ♀s are comparatively seldom met with. *Cassius* is a butterfly of very slender structure, and flies more feebly than any other member of this genus I have seen on the wing.

The paired sexes, taken at D'Urban, Natal, were forwarded to me by Colonel Bowker in the year 1879.

Localities of *Pseudonympha Cassius.*

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Cape Town. Hout Bay. Swellendam (*A. C. Harrison*). Knysna. Plettenberg Bay. Oudtshoorn (— *Adams*).

b. Eastern Districts.—Port Elizabeth (*W. S. M. D'Urban*). Uitenhage (*S. D. Bairstow*). Grahamstown. Frankfort (*W. S. M. D'Urban*).

D. Kaffraria Proper.—Butterworth and Bashee River (J. H. Bowker).

E. Natal.

a. Coast Districts.—D'Urban. Verulam. Mapumulo. Itongati.

b. Upper Districts.—Pietermaritzburg. Greytown. Intzutze. Tunjumbili. Udland's Mission Station. Karkloof (*J. H. Bowker*).

K. Transvaal.—Lydenburg District (*T. Ayres*).

GENUS LEPTONEURA.

Leptoneura, Wallengren, Kongl. Sv. Vet.-Akad. Handl., 1857; Lep. Rhop. Caffr., p. 31; Trimen, Rhop. Afr. Aust., ii. 192 (1866).

IMAGO.—Closely allied to *Pseudonympha*. *Eyes* hairy; *palpi* scaly laterally, and with much shorter, less bristly hairs (especially beneath); the terminal joint shorter, less acute than in *Pseudonympha; antennæ* rather short, with the club distinct and rather gradually thickened (except in *L. Cassus* and *Cassina*, where it is rounded, abruptly formed, and somewhat flattened). *Thorax* rather more robust. *Wings* with neuration similar to that of *Pseudonympha*, but with the costal nervure of *fore-wings* unswollen, and the discoidal cell of *hind-wings* much shorter; *in the* ♂, on the under side of fore-wings, a narrow, elongate, shining greyish space, on inner margin at base, ordinarily hidden by the costa of hind-wings. *Fore-legs* of ♂ extremely small, clothed with elongate scales and a few bristly hairs; tibia rather shorter than femur, short tarsal portion abruptly reduced terminally into a straight acute spine. *Middle* and *hind legs* short; femora smooth, scaly; tibiæ set with very fine bristles, and with terminal spurs short; tarsi also finely bristly, with a longer, more spiny pair of bristles at end of each articulation beneath.

LARVA.—Rather thick and short; head large; tail very shortly bifid. Skin set generally with very short bristles.

PUPA.—Cylindrical, very thick (especially about middle); head and back of thorax very blunted, scarcely prominent.

Besides the difference noted in the antennæ, *L. Cassus*, Linn., and *Cassina*, Bul., are distinguished from their congeners by the more slender terminal joint of the palpi, and by a generally more robust structure of the body, the abdomen being longer and thicker, and tufted at the extremity.

The *Leptoneuræ* are larger insects than the species of *Pseudonympha*, the two smallest of them (*L. Bowkeri* and *Cassina*) being equal in size to the ♀ *P. vigilans*, the largest of its genus. Their habits are quite like those of the latter group; they frequent open ground, several species preferring hilly tracts. Their flight is rather stronger and (in the males) longer sustained than that of *Pseudo-*

nympha, and in the case of *L. Clytus* (the most numerous of the known species), inclining to take a circular direction. With the exception of *Clytus*, the members of this genus appear to be very local, and none of them seems to present the abundance in individuals of the species named,—*Cassus*, Linn., being, however, tolerably plentiful near Cape Town.

The undoubted occurrence of the latter species in Madagascar is very remarkable, as it certainly seems to be scarcer in the eastern districts of the Colony, and is not recorded from Natal or from the African coast nearer to Madagascar. But for this singular extension of the range of one of its species, *Leptoneura* would stand as one of the few endemic South-African genera.

19. (1.) **Leptoneura Clytus**, (Linn.)

Papilio Clytus, Linn., Mus. Lud. Ulr. Reg., p. 268, n. 87 (1764); and Syst. Nat., i. 2, p. 768, n. 124 (1767).
Papilio Tisiphone, Rott., in Naturforschen, vi. p. 16, t. 1, ff. 1, 2 (1775); *apud* Kirby, Syn. Cat. D. Lep., p. 56.
Papilio Clytus, Cram., Pap. Exot., i. pl. lxxxvi. ff. C, D (1779).
„ „ Wulfen, Descr. Capens. Ins., p. 31, n. 30 (1786).
Satyrus Clytus, Godt., Enc. Meth., ix. p. 525, n. 132 (1819).
Erebia Clytus, Westw., Gen. D. Lep., ii. p. 380, n. 43 (1851).
Leptoneura Clytus, Wallengr., K. Sv. Vet.-Akad. Handl., 1857, Lep. Rhop. Caffr., p. 31.
„ „ Trim., Rhop. Afr. Aust., ii. p. 192, n. 109 (1866).

Exp. al., 2 in. 1–4 lin.

Brown, with a glistening greenish and reddish surface-light; fore-wing with creamy-yellow, macular, transverse stripes. Fore-wing: on costa beyond middle commences an outwardly-convex, interiorly much-dentated creamy-yellow band, very variable in depth of hue, width, and continuity, properly reaching to submedian nervure, but often shorter and much interrupted by ground-colour; this band is usually joined about first median nervule by a much narrower stripe of the same colour from fourth subcostal nervule near apex, outwardly bordering a large ocellus, which is narrowly edged with darker yellow inwardly; ocellus compound, elongate, black, with two (rarely three) large blue pupils. *Hind-wing:* near and parallel to hind-margin a row of five black, fulvous-ringed ocelli, unipupillate with blue, of which the fifth is much the smallest and occasionally nearly obsolete; rarely a sixth small ocellus near costa. UNDER SIDE.—*Paler; hind-wing much paler, with dark zigzag striæ. Fore-wing:* apex greyish-white; yellow stripes much narrowed, the larger seldom reaching below third median nervule, its inner edge thence being indicated by a dentate dark-brown streak,—the outer forming with the inner edging only a ring about ocellus; in discoidal cell, about its centre, two dark transverse streaks, the inner of which is macular and nearly always continued to submedian nervure. *Hind-wing:* transverse striæ three,—the macular one near base, and the zigzag one crossing cell, both edged *outwardly* with whitish scales,—the zigzag one about middle similarly edged *inwardly ;* a dark line closing cell; ocelli in row seven, brown, with white-pupilled black centres, and narrowly ringed with yellow and brown, two first on costa out of line with the rest, the last larger than on upper side, often bipupillate,—all of them bounded by confluent rings of whitish scales. Both above and below, a paler border on hind-margin of both wings, divided longitudinally by a dark line, straight or slightly waved on upper side, waved near apices on under side.

The sexes do not differ appreciably, except that in the ♂, on the under side, the creamy-yellow band almost always extends brokenly below third median nervule, and as far as first median nervule, and the white scaling in the hind-wing is more pronounced.

PUPA.—Dull brownish-grey, speckled with fuscous. On back of abdomen, a transverse row of thin small indistinct fuscous spots occupying middle line of each segment; on under side of abdomen fuscous irroration close and thick, leaving two convergent clear streaks of ground-colour from ends of wing-covers to anal point. Central line of breast covering haustellum defined by two fuscous longitudinal streaks. Neuration of wings distinctly defined with brown on wing-covers.

The pupa here described was found by Mr. T. D. Butler, the taxidermist of the South-African Museum, on the 26th March 1873, under a large stone on the ascent of the Devil's Peak, Cape Town. It was lying perfectly free, without attachment of any kind. The imago, a fine ♀, emerged on 8th April.

VAR. A. (Grahamstown, Cape Colony).

Exp. al., 2 in. 6–7 lin.

♂ Considerably larger; rings of ocelli in hind-wing paler, yellower.

Aberr. ♂ (Cape Town).

Fore-wing: a reddish-ochreous transverse meso-cellular fascia, inwardly ill-defined, outwardly bounded by dark-brown streak; a little scaling of the same colour between extremity of cell and pale creamy-yellow stripe. *Hind-wing:* some similar, but more conspicuous scaling between extremity of cell and first two ocelli of submarginal row. (Taken by R. Trimen, 10th April 1874.)

The large Grahamstown variety occurs freely at Highlands, whence Mrs. Barber sent me several specimens; but I have not seen the ♀ of it. It manifestly inclines towards the more eastern and still larger form *L. Oxylus*, mihi.

The ♂ *aberration* shows in its ill-defined imperfect upper-side fasciæ some indication of an approach to the colouring of the curious form *L. Mintha*, Geyer, but exhibits no trace of the latter's peculiar pale neuration, &c., of the under side.

In a ♂ captured near Seymour, in the Stockenstrom District, by Mr. Scully, the upper part of the fore-wing ocellus is reduced to a very small separate ocellus, which on the under side becomes quite obsolete.

This well-known species appears in open ground generally during the autumn, from the middle of February to the end of May, being most numerous in March. Among the great number of ♂s which keep in active flight over the fields, very few ♀s are to be seen—I think not more than one in fifty. *Clytus* is of wide distribution in the Cape Colony, but does not seem to occur further eastward, the nearly allied *L. Oxylus*, mihi, replacing it in Kaffraria Proper.

Localities of *Leptoneura Clytus*.

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Cape Town. Caledon (*J. X. Merriman*). Genadendal (*G. Hettarsch*). Knysna. Plettenberg Bay. Oudtshoorn (— *Adams*).
    b. Eastern Districts.—Grahamstown (*M. E. Barber*). Uitenhage (*S. D. Bairstow*). Seymour, Stockenstrom (*W. C. Scully*).

20. (2.) **Leptoneura Oxylus**, Trimen.

PLATE VI. fig. 5, ♂.

♂ *Leptoneura Oxylus*, Trimen, Trans. Ent. Soc. Lond., 1881, p. 437.
Leptoneura Clytus (Linn.), Var. A., Trim., Rhop. Afr. Aust., ii. p. 194 (1866).

Exp. al., 2 in. $7\frac{1}{2}$–$9\frac{1}{3}$ lin.

♂ *Brown, strongly glossed with a bronzy lustre of mingled reddish and greenish; fore-wing with pale-creamy macular transverse submarginal stripes. Fore-wing:* a transverse, exteriorly convex, interiorly strongly-dentate, pale-creamy macular stripe, from costa just beyond middle to anal angle; of this stripe the upper portion is rather narrow and uninterrupted, but the lower portion is broader and consists of three spots more or less completely separated from the upper portion and from each other; close to apex, a short, much curved, unbroken, wider stripe of the same colour, from near costa to third median nervule, along which, by a very thin ray, it is united to the preceding stripe; touching inner edge of this short stripe are three rather small, more or less confluent, black ocelli with widely blue-clouded white pupils, bounded interiorly by a thin creamy-yellow line; along hind-margin a rather narrow, ill-defined whitish border, separated by a brown streak from apical pale-creamy stripe, and traversed longitudinally by another brown streak close to hind-marginal edge. *Hind-wing:* beyond middle, between second subcostal nervule and submedian nervure, a curved transverse row of five conspicuous black ocelli, with bluish white pupils, in pale fulvous rings; of these ocelli the fifth is much smaller than the rest, and often bipupillate; a narrow hind-marginal border of a paler brown than the ground-colour, traversed by a dark brown streak close to hind-marginal edge. UNDER SIDE: *rather paler, less glossy. Fore-wing:* the creamy bands whiter, the inner one considerably narrowed, its upper portion more irregular, and sometimes even interrupted, its lower macular portion with the two lower spots very much reduced or obsolete; the inner edge of this stripe is defined by a dentate stria darker than the ground-colour; in discoidal cell, a little beyond its middle, a slightly-angulated dark-brown transverse stria, preceded by a shorter striate marking, sometimes broken into two small spots. *Hind-wing:* a very short dark stria (or two small spots) in discoidal cell near base; two irregular dark transverse striæ from costal to submedian nervure—one before, the other about, middle—of which the first is exteriorly edged with some indistinct whitish scales; outer stria much more irregular than the inner; ocelli as above, but their pupils smaller, their rings yellow, narrower, and enclosed in thin outer rings of dark-brown, and the black containing traces of a very thin bluish crescent; two additional, rather duller, but similar ocelli near costa, before the others; both interiorly and exteriorly the ocelli are bounded by some whitish or whitish-violaceous clouding.

This fine form of *Leptoneura* seems to be sufficiently distinct from *L. Clytus* (Linn.), to be ranked as a separate species. The female still remains unknown to me, but, considering how rarely that sex of *Clytus* proper is taken in comparison with the very numerous males, this is perhaps not to be wondered at in the case of a form that appears to be very local. The male *L. Oxylus* differs from *L. Clytus* in the following respects, viz.:—(1) Its much larger size, *Clytus* not expanding above 2½ inches, and being generally not more than 2 in. 4 lin. across the wings; (2) its paler colouring throughout; (3) the proportionally smaller and invariably triple ocellus of fore-wing, which in *Clytus* is rarely more than double, and, in the instances where it is triple, the lowest (or third) factor of the compound ocellus is small or minute; (4) the greater width of the creamy stripe beyond this ocellus; (5) the whitish hind-marginal border of fore-wing; (6) the more irregular and broken character of the macular creamy stripe across disc of fore-wing; (7) the more distinct ocelli of hind-wing, and their conspicuous pale fulvous (instead of dull fulvous) rings; (8) on the under side of the hind-wing the ocelli are much blacker and their yellow rings much brighter; while (9) the two dark striæ are very much less irregular, the outer one projecting farthest from base on the radial nervule, so that the space between the striæ is widest at that point, instead of on the third median nervule; and (10) the whitish edging of the striæ is either wanting or very faintly present, and the basal broken stria of *Clytus* is all but obsolete. A structural difference is noticeable in the antennæ, which are proportionally shorter in *Oxylus;* they are also of a paler and more yellowish rufous.

Colonel Bowker sent this butterfly from Butterworth, Kaffraria Proper, as long ago as 1861, and afterwards from the Bashee River in the same territory. Mr. W. S. M. D'Urban informed me that he had noticed this large "Variety A." of *L. Clytus* in the then colony of British Kaffraria; but it was not until March 1875 that Colonel Bowker succeeded in taking specimens on the west bank of the Kei River, in the division of East London. I have not heard of the butterfly occurring in Natal, or elsewhere in South Africa than within the limited range indicated.

Localities of *Leptoneura Oxylus.*

I. South Africa.
  B. Cape Colony.—East London District: bank of Kei River (*J. H. Bowker*).
  D. Kaffraria Proper.—Butterworth and Bashee River (*J. H. Bowker*).

21. (3.) **Leptoneura Mintha,** (Geyer).

Dira Mintha, Geyer, Zutr. Samml. Exot. Schmett., 5th Cent., p. 15, n. 426, ff. 851–852 (1837).
Erebia Mintha [an *E. Clytus,* Linn. Var. ?], Westw., Gen. D. Lep., p. 380, n. 48 (1851).
Leptoneura Clytus (Linn.), ? Var. C., Trim., Rhop. Afr. Aust., ii. p. 194 (1866).
Leptoneura Mintha, Butl., Cat. Sat. Brit. Mus., p. 71, n. 2 (1868).

Exp. al., 2 in. 1–5 lin.

♂ *Dull brown, with a bronzy surface-gloss; fore-wing with a pale-creamy macular transverse stripe beyond middle. Fore-wing:* stripe occupying same position as in *L. Clytus,* but more distinctly interrupted on third median nervule, and more curved inward inferiorly; the three lower spots of the stripe quite disconnected, and, though blunter interiorly, exteriorly quite sharply acuminate—the reverse of what occurs in *Clytus;* compound ocellus near apex bipupillate (rarely tripupillate) with white (not blue, as in *Clytus*), and bordered externally by a narrow quadri-macular dull-creamy stripe; a little before middle, a transverse fuscous streak, crossing cell, and interrupted on median nervure. *Hind-wing:* beyond middle, an interrupted, often very indistinct, fuscous streak, externally edged narrowly with dull ochreous-yellow; a submarginal row of four moderate-sized white-pupilled ocelli (often a minute indistinct fifth ocellus near anal angle) in pale dull ochreous-yellow rings. UNDER SIDE.—*Paler and duller; neuration of hind-wing clouded with white. Fore-wing:* base suffused with deep-fulvous as far as fuscous transverse streak; apical margin narrowly clouded with white, fading into pale-brown along hind-margin. *Hind-wing:* near base, two fuscous whitish-edged spots in discoidal cell, and a short longitudinal fuscous whitish-edged streak between median and submedian nervures; a fuscous streak marking extremity of cell; before middle, across wing, a highly irregular dentated fuscous streak, exteriorly clouded with white; beyond middle, a similar but stronger, less dentated streak, exteriorly much more widely white-clouded, and sharply interrupted on first and on third median nervules; six ocelli, much smaller than those on upper side, and with scarcely any trace of yellowish rings; a rather narrow submarginal shining-white stripe, thinly edged on both sides with fuscous, running from costa just before apex to anal angle; costa itself with a linear white edging.

♀ *Pale-creamy stripe beyond middle of fore-wing of a yellower tint* *than in ♂; rings of ocelli in hind-wing more distinct and faintly tinged with fulvous. Fore-wing:* transverse fuscous streak bounded interiorly by well-marked fulvous clouding. *Hind-wing:* transverse fuscous streak exteriorly edged with somewhat suffused fulvous. UNDER SIDE.—*Fore-wing:* fulvous extending more or less fully over disc as far as lower part of creamy macular stripe (sometimes covering the lowest spot). *Hind-wing:* white clouding of neuration and of transverse streaks much more restricted, but at the same time much more clearly defined; rings of ocelli much more distinct—in one case quite clear creamy-yellow.

This butterfly looks so very like a mere aberration of *L. Clytus* (Linn.), that I should not have been disposed to treat it as distinct had not specimens (the first that reached me) of both sexes been lately—1883–84—sent from Burghersdorp, in the north-east of the Cape Colony, by Dr. D. R. Kannemeyer, with the information from that careful observer that it was the prevalent form of *Leptoneura* in that vicinity. The differences noted in the above description seem to be constant, but more material is necessary to make this clear. The exact locality of the well-coloured ♀ figured by Geyer in the "Zutrage" quoted is not recorded, but it is not unlikely that the specimen was taken near Cape Town. *Mintha* is, however, in contrast to *Clytus,* extremely rare in this locality, as I have never yet met with it, and the only example known to me as certainly found in the neighbourhood is a ♀ captured at Tokai, in the Cape District, by the late Mr. H. W. Oakley, Assistant-Curator of the South-African Museum, on the 4th April 1884. Mr. Oakley revisited the spot, but did not obtain any other specimens, though he informed me that he believed one *Leptoneura* which escaped capture belonged to the form in question.

Localities of *Leptoneura Mintha.*

I. South Africa.
    B. Cape Colony.
        a. Western Districts.—Tokai, Cape District (*H. W. Oakley*).
        b. Eastern Districts.—Burghersdorp (*D. R. Kannemeyer*).

22. (4.) **Leptoneura Dingana,** Trimen.

♂ *Leptoneura Dingana,* Trim., Trans. Ent. Soc. Lond., 1873, p. 102, pl. i. f. 1.

Exp. al., 2 in. 2–4 lin.

♂ *Dark-brown. Fore-wing:* beyond middle a curved macular *fulvous-ochreous band* between subcostal nervure and second median nervule, the three upper spots united and forming a subapical bar; contiguous to outer edge of bar a compound black ocellus, bipupillate or (rarely) tripupillate with bluish-white. *Hind-wing:* a submarginal row of five unipupillate black ocelli in strongly-marked fulvous-ochreous rings, of which the first is between the subcostal nervules, and the fifth between second and first median nervules; an indistinct and minute sixth ocellus close to anal angle. UNDER SIDE.—*Dull fuscous-brown, with very indistinct markings. Fore-wing:* only a faint (often no) trace of fulvous band; compound ocellus smaller than above, ill-defined, but the pupils conspicuous. *Hind-wing:* the six ocelli present, but without fulvous rings; usually an additional small ocellus next costa; before them indistinct traces of an irregular transverse streak, darker than ground-colour, but inwardly edged by a paler line; beyond them two indistinct, parallel, hind-marginal dark streaks; before middle a similar irregular streak, with a paler external edging.

♀ *Paler. Fore-wing:* fulvous-ochreous band broader, especially in its lower portion. *Hind-wing:* rings of ocelli paler, broader. UNDER SIDE.—*Fore-wing:* band present, but much narrower throughout. *Hind-wing:* median transverse stria rather more distinct.

This *Leptoneura* is nearly allied to *L. Bowkeri*, mihi, but is of the larger size of *Clytus*, Linn., and presents a very different appearance from the former species, owing to its fulvous band and very much larger compound ocellus in the fore-wing.

I founded this species on a single specimen taken in Natal (October 1868) by Mr. Walter Morant. Examples of both sexes received from the Transvaal in 1878 and 1879 show that the original specimen in question is a ♂. Mr. Morant wrote that he observed it flying low, and settling on the ground and on rocks, with the wings open.

A fine ♂ specimen was sent to me from Estcourt, Natal, by Mr. J. M. Hutchinson, in November 1884.

Localities of *Leptoneura Dingana*.

- I. South Africa.
  - E. Natal.
    - *b.* Upper Districts.—Malang Spruit, between Mooi and Bushman's Rivers (*W. Morant*). Estcourt (*J. M. Hutchinson*).
  - K. Transvaal.—Lydenburg District (*T. Ayres*).

23. (5.) **Leptoneura Bowkeri**, Trimen.

♂ *Leptoneura Bowkeri*, Trim., Trans. Ent. Soc. Lond., 1870, p. 348, pl. vi. f. 2.

♂ *Leptoneura Clytus* (Linn.), Var. B., Trim., Rhop. Afr. Aust., ii. p. 194 (1866).

Exp. al., 1 in. 10 lin.—2 in. 3 lin.

♂ *Dark-brown, with a rufous gloss. Fore-wing:* a strongly-curved row of six whitish irregularly-shaped spots (of which the upper three are in contact with each other, but the lower three separate, sub-rhomboidal, and diminishing in size downward) running from the costa a little beyond the middle to just above the first median nervule, near hind-margin; rarely a seventh indistinct spot below the first median nervule; externally contiguous to the second spot of this row, near the apex, an indistinct small black ocellus, unipupillate with bluish-white. *Hind-wing:* a submarginal row of four or five moderately-sized white-unipupillate black ocelli, in narrow dull-rufous rings. UNDER SIDE.—

Hind-wing and apex of fore-wing very slightly paler than the rest of the surface. Fore-wing: a row of spots as above, but the fifth and sixth spots more or less tinged with fulvous, and a faint trace of a seventh spot (also fulvous) below the first median nervule; a spot, and a curved stria beyond the spot, rather darker than the ground-colour, about the middle of the discoidal cell; two parallel dark lines along hind-margin, the inner one becoming obsolete about the second discoidal nervule. *Hind-wing:* a short dark transverse streak in discoidal cell, near base; a dark line closing the cell; two somewhat suffused dark stripes across the wing, one (edged with greyish scaling outwardly) before the middle, dentate, but continuous and tolerably regular, the other (edged with greyish scaling inwardly) irregular, more strongly dentate, and abruptly interrupted on the third median nervule; ocelli seven (but that nearest the costa small and indistinct, or sometimes wanting), usually ill-defined, in brownish-ochreous rings; two parallel marginal lines distinct throughout.

♀ *Duller, more reddish. Fore-wing:* the first (costal) spot of curved transverse row wanting, and the second, third, and fourth spots much reduced in size; all spots except the second dull-rufous instead of whitish; ordinary apical ocellus much better defined than in ♂,—below it two similar ocelli, of which the lower is smaller and externally edged with rufous. *Hind-wing:* ocelli larger, more distinct, their rufous rings much wider and paler. UNDER SIDE.—*Fore-wing:* row of spots as on upper side, but the three upper ones all more or less whitish; lowest of three ocelli obsolete. *Hind-wing:* greyish scaling of transverse striæ much better developed; ocelli more distinct.

In two examples (♂) the small and imperfect ocellus of the fore-wing is accompanied, on the upper side only, by a minute black spot, below and separate from it, on the outer edge of the third spot in the whitish band. In one of the Bashee River specimens, all the spots (seven) of the band are unusually small, and completely separated, the three lower ones being minute and fulvous-tinged, both on upper and under sides of the wings; while in a Katberg example, taken by Mrs. Barber, they are all very small indeed,—the three lower ones being all but obsolete.

The ♂ may readily be distinguished from *L. Clytus* by its *smaller size; darker ground-colour; total want of narrow ochreous band beyond ocellus of fore-wings; much narrower, paler, and more strongly-curved macular band, and almost obsolete ocellus of the fore-wings*,—both which markings are much farther from the end of the discoidal cell, and nearer to the apex, than in *Clytus*, and *the much wider distance apart* (*on the under side of the hind-wing*) *of the two transverse dark stripes at their costal origin.* The antennæ are rather paler than those of *Clytus.* These differences also characterise the ♀ *Bowkeri*, except that the latter presents three small ocelli in the fore-wing, and is not so dark in ground-colour.

L. Bowkeri is a lover of high-lying localities, all the recorded specimens having occurred at a tolerable elevation. Colonel Bowker notes it as not rare in Basutoland, and in Kaffraria observed that it was confined to lofty hill ridges.[1]

The only ♀ that I have seen was acquired by the South-African Museum in 1879 from Mr. T. Ayres, who noted it as having been captured in the Lydenburg District of the Transvaal.

Localities of *Leptoneura Bowkeri.*

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—Katberg (*M. E. Barber*). Aliwal North District: heads of Kraai River (*J. H. Bowker*). Bedford District: Kagaberg and Winterberg (*J. P. Mansel Weale*).
    d. Basutoland.—Koro-Koro (*J. H. Bowker*).
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker*). North Pondoland (*Sir H. Barkly*).
  E. Natal.
    b. Upper Districts.—Karkloof (*W. Morant*). Weenen County (*J. M. Hutchinson*).
  K. Transvaal.—Lydenburg District (*T. Ayres*).

24. (6.) **Leptoneura Cassus**, (Linn.)

Papilio Cassus, Linn., Mus. Lud. Ulr. Reg., p. 269, n. 88 (1764); and Syst. Nat., i. 2, p. 768, n. 125 (1767).
♀ ,, ,, Cram., Pap. Exot., iv. pl. cccxiv., ff. C, D (1782).
Satyrus Cassus, Godt., Enc. Meth., ix. p. 526, n. 133 (1819).
Erebia Cassus (Linn.), [? *Clytus* ♀], Westw., Gen. D. Lep., p. 380, n. 44 (1851).
Leptoneura Cassus, Trim., Rhop. Afr. Aust., ii. p. 195, n. 110 (1866).

Exp. al., 2 in. 1–6 lin.

Very dark brown, with a purplish gloss; fore-wing widely coloured with deep-fulvous. Fore-wing: fulvous in ♂ much obscured, ferruginous, or almost merged in ground-colour, nearly filling discoidal cell, covering basal halves of median nervules, and extending to the inner edge of a large white-bipupillate, ill-defined black ocellus, near apex—in ♀ broader, paler, and crossed by a faint disco-cellular streak of brown, and a long, more conspicuous streak from costa beyond middle,—in neither sex extending above subcostal or below submedian nervure. *Hind-wing:* a row, beyond middle, of 3–5 white-pupilled black ocelli in deep-fulvous rings, between second subcostal nervule and median nervure. UNDER SIDE.—*Paler; costa and apex of fore-wing, and hind-wing wholly, more or less suffused with greyish-ochreous; fulvous* of fore-wing not reaching ocellus, but *scarcely reaching beyond outer transverse streak,* which, with that in cell, is usually clearly marked in both sexes. *Hind-wing:* two crenelated dark-brown transverse lines, one before, the other about middle; ocelli very faintly represented by pale dots and incomplete pale rings, seven in number; beyond them a lunulate dark line. In both wings a dark line along, and close to, hind-margin.

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[1] Three specimens presented to the South-African Museum in 1874 were taken by Sir Henry Barkly, K.C.B., "on a steep grassy ridge" on the border of Jojo's Country, North Pondoland. Mr. J. P. Mansel Weale also informed me that he never met with the butterfly away from mountains in the Bedford District; it appeared there from October to December.

In some ♂ specimens the ocellus of fore-wing is tripupillate, the lowest pupil indicating the existence of a second ocellus; and two ♀s in my collection have, in addition to the large three-pupilled ocellus, two well-marked smaller ocelli between first and third median nervules, the lower being the larger. In one ♀ the fulvous indistinctly extends round outer edge of large ocellus, as in Cramer's figure, and indications of this appear in others.

Aberr. ♀.—*Fore-wing:* fulvous paler than usual, well-defined, distinctly and broadly divided into two portions, basal and subapical (very much as in *Pseudonympha Trimenii,* Butl.), the dark dividing space being limited by the two dark transverse streaks usually observable in the ♀, and dusted with fulvous; ocellus bipupillate, larger than usual, more obliquely placed. *Hind-wing:* three of the four ocelli rather larger than usual and very distinct. UNDER SIDE.—More ochreous; markings less distinct. *Fore-wing:* fulvous paler; outer dark transverse streak straighter and more strongly marked.

Hab.—Zwaarte Ruggens, Uitenhage District; August 1870 (*J. H. Bowker*).

Godart (*loc. cit.*) notes two males in which the fore-wings wholly wanted the ocellus on the upper side, but on the under side were quite as usual.

LARVA.—Pale sandy-brown; along middle of back a fine double black line, between two sinuated dusky streaks; on each side a subdorsal, broad, dusky streak, crossed superiorly on each segment by a short, oblique, narrow mark of the ground-colour; spiracles black, surrounded by dusky irroration. Head large, dark-brown, set with short black bristles and sandy hairs. Body generally rather closely set with short black bristles; tail very slightly bifid, the two short prominences sandy, set with black bristles like the rest of the surface.

PUPA.—Pale-sandy, inclining to reddish abdominally, everywhere minutely reticulated with fuscous. A fuscous line down middle of back; the edges of all the limbs, and the neuration of the wings defined by fuscous lines. Back of abdomen with a pale-sandy streak on each side and two very indistinct central ones; a series of indistinct paler spots just above spiracles. Length 7½ lines. Form like that of *Clytus,* but abdomen shorter inferiorly, being more abruptly curved.

Not suspended; lying perfectly free and unattached.

Mr. T. D. Butler and Mr. R. Lightfoot both brought me examples of this larva, but I did not succeed in rearing any of them. The latter, however, was more successful, obtaining two pupæ from larvæ collected in August 1885.

From one of these pupæ I hatched a ♂ *Cassus* on 18th September, the pupal state having lasted thirty days. The larvæ fed on a grass.

This *Leptoneura* is not uncommon in the Western Districts of the Cape Colony, but local in its habits, preferring hilly or elevated stations. It flies from the end of September to the middle of December, and is conspicuous on the wing from its dark colouring. In flight it resembles its allies, keeping near the ground and often settling, but it is rather swifter than *L. Clytus.* I captured the paired sexes near Worcester on the 22d October 1863.

The occurrence of this species in Madagascar, for which in 1867 the only evidence known to me was a specimen labelled with that locality in the British Museum, has of late years been established; and the butterfly has been figured as *Ypthima Cassus* in the plates of M. Grandidier's great work on the Malagasy fauna, which were shown to me by Mr. H. Grose Smith in 1881.

Localities of *Leptoneura Cassus.*

- I. South Africa.
  - B. Cape Colony.
    - *a.* Western Districts.—Cape Town. Simon's Town. Vogel Vley, Tulbagh District. Worcester. Hex River, Worcester District (*L. Péringuey*). Springbokfontein, Namaqualand District (*G. A. Reynolds*).
    - *b.* Eastern Districts.—Zwaarte Ruggens, Uitenhage District (*J. H. Bowker*). Murraysburg (*J. J. Muskett*).
- II. Other African Regions.
  - A. South Tropical.
    - *bb.* Madagascar.—Coll. Brit. Mus.

25. (7.) **Leptoneura Cassina,** Butler.

♀ *Leptoneura Cassina*, Butl., Cat. Sat. Brit. Mus., p. 72, pl. ii. f. 12 (1868).
Leptoneura Cassus (Linn.), [part], Trim., Rhop. Afr. Aust., ii. p. 196 (1866).
Leptoneura Cassina, Trim., Trans. Ent. Soc. Lond., 1868, p. 283.

Exp. al., (♂) 1 in. 9–10 lin.; (♀) 2 in.

♂ *Very dark-brown, with a purplish gloss; fore-wing suffused with deep ferruginous-fulvous (sometimes almost obsolete). Fore-wing:* apical ocellus as in *L. Cassus* (Linn.), but not so well defined, and sometimes tripupillate; dark-fulvous usually more restricted than in *Cassus*, and rarely extending as far as ocellus. *Hind-wing:* ocelli beyond middle very indistinct (especially their fulvous rings), seldom exceeding three in number. UNDER SIDE.—*Hind-wing and costal and apical border of fore-wing rather paler than on upper side, irrorated unequally with whitish or hoary-grey scales. Fore-wing: as in Cassus*, except for rather dense hoary scaling just at apex. *Hind-wing:* whitish irroration thickest immediately beyond inner transverse dark streak, and between discal row of ocelli and hind-margin (especially at and near apex); ocelli very obscure, except as regards the inner portions of their rings, which form conspicuous, thin, whitish lunules or lunulate spots.

♀ *Fulvous better defined*, especially in rings of ocelli in hind-wing; ground-colour quite as dark as in ♂. UNDER SIDE.—Fulvous of fore-wing much paler; *hind-wing and borders of fore-wing very much paler than in ♂, with an ochreous tinge*, and with the hoary irroration much better developed (especially at and near apex of hind-wing).

This form is doubtfully separable from *L. Cassus* (Linn.), the only differences of importance being its considerably smaller size, darker colour (especially in the ♀), and the hoary scaling on the under side (particularly apparent at the apices and on the fragmentary rings of the hind-wing ocelli). It is certainly scarcer than *Cassus*, and haunts a different station, being confined, as far as I know, to the sandy flats in the Cape District and Piketberg. The only example of several seen which I took at the latter locality was a very dark ♂, which in size and the yellower less hoary under-side scaling showed some approach towards *Cassus*. The only females (two) that I have met with present no trace of the small additional ocelli in the fore-wing often found in the ♀ *Cassus*. October is its chief month of appearance, but I have taken it in September, and (worn) as late as December.

Localities of *Leptoneura Cassina*.

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Cape Town. Piketberg.

Genus MYCALESIS.

Mycalesis, Hübner, Verz. Bek. Schmett., p. 54 (1816).

Imago.—*Head* small, tufted in front; *eyes* usually smooth; *palpi* rather long, laterally compressed, acute, the basal and middle joints set densely and compactly beneath with bristly hairs, the terminal joint rather short, acuminate, clothed with very short hairs; *antennæ* rather short, gradually but generally very distinctly clubbed. *Thorax* small and short, prominent and hairy dorsally. *Fore-wings* rather broad and truncate; costa much arched; hind-margin slightly convex, very slightly sinuated; costal nervure always, and median and submedian nervures usually, swollen at the base; *in the* ♂, the last-named nervure often has on its lower edge, a little before middle, a small sac enclosing a tuft of hair, and the inner margin between base and middle is usually convex, while on the under side there is a glossy, sub-iridescent, inner-marginal space; first subcostal nervule originating some way before, the second at, extremity of discoidal cell; where median nervure is swollen, its first nervule is given off at extremity of swelling; cell broad, rather short; middle and lower disco-cellular nervules forming at their junction an obtuse angle towards the base,—the lower nervule much longer than the middle one. *Hind-wings* broad, rounded; hind-margin more or less sinuated; anal angle often rather pronounced; costa at base slightly excavated, but at a little distance from base strongly prominent, more or less fringed with short hairs; *in the* ♂, costal border conspicuously glossy and sub-iridescent, with usually a tuft of long hairs springing from edge of subcostal nervure; discoidal cell very short, rather broad, obliquely truncate terminally by the almost continuous disco-cellular nervules. *Fore-legs* of ♂ small, but quite noticeable, with the femur short, slender, and finely hairy, but with the tibia and tarsus densely hairy; those of ♀ much larger and longer, and very finely hairy throughout. *Middle and hind legs* moderately stout, clothed with scales; tibial spurs short. *Abdomen* in ♂ rather elongated, and tufted with hair at the end.

This genus of numerous closely-related species is characteristic of the Old-World Tropics, extending from the West-African coast to Australia, only a few species occurring in extra-tropical countries, one of them inhabiting Japan. About half of the ninety species recorded are natives of South-Eastern Asia and the Indo-Malayan Islands, while Australia (including the Austro-Malayan Islands) and Africa nearly equally divide the remaining half. Westwood (*Gen. Diurn. Lep.*, ii. p. 393) has pointed out that the genus is divisible into two groups,—one with only the costal nervure of the fore-wings swollen basally, and with the ♂ badge borne on the submedian nervure of the same wings,—the other with the median and submedian nervures also swollen, and with the badge borne on the subcostal nervure of the hind-wings.[1] All the African species appear to belong to the latter division.

These butterflies are of medium size and obscure-brown colouring (varied in some Eastern species with fulvous-ochreous), with submarginal ocellated spots more numerous and distinct on the under than on the upper side of the wings. The fore-wings usually bear only two of these ocelli, the lower of which is almost always considerably the larger of the two. The two South-African species that I have seen in life frequent wooded spots, *M. Safitza*—which is by far the commoner and more widely distributed—preferring shady spots *in* woods, and *M. perspicua* more open localities on the outskirts. I am not aware of the haunts of *M. Simonsii*, a singular pale yellow-ochreous form, which appears just to penetrate extra-tropical South Africa, but in all probability it is also a sylvan butterfly. The flight of *Safitza* and *Perspicua* is extremely weak and low, and interrupted by frequent settling on the ground or on herbage.

It must have been in error that the little *M. Narcissus*, Fab., so abundant in Mauritius, was recorded as a native of Natal, no specimen having occurred in any of the numerous collections from various parts of that colony which I have examined during the past twenty-two years.

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[1] Mr. Moore's genera *Orsotriœna* and *Calysisme* (*Lep. Ceylon*, i. pp. 20, 22) seem respectively to correspond with these two groups. The Japanese *M. Perdiccas*, Hewits., links the two divisions, presenting the three swollen nervules and ♂ badge in the fore-wings, *and also the ♂ badge in the hind-wings.*

26. (1.) **Mycalesis Safitza**, Hewitson.

♂ *Mycalesis Safitza*, Hewits., Gen. Diurn. Lep., p. 394, n. 10, pl. 66, f. 3 (1851); Exot. Butt., iii. p. 80, pl. 40, f. 4 (1862).
♂ *Mycalesis Eusirus*, Hopff., "Monatsber. d. K. Akad. Wissensch., Berl., 1855, p. 641, n. 13;" and Peters' Reise n. Mossamb., Ins., p. 393, pl. 25, ff. 3, 4 (1862).
♂ *Mycalesis injusta*, Wallgrn., K. Sv. Vet.-Akad. Handl., 1857, Lep. Rhop. Caffr., p. 33.
VAR. A. ♂ and ♀.
! ♂ *Mycalesis Evenus*, Hopff., *op. cit.*, "1855, p. 641, n. 14;" and p. 394, pl. 25, ff. 5, 6 (1862).
♀ *Mycalesis caffra*, Wallgrn., *op. cit.*, 1857, p. 34.
♂ ♀ *Mycalesis Evenus*, Trim., Rhop. Afr. Aust., ii. p. 207, n. 120 (1866).

Exp. al., (♂) 1 in. 8–11 lin.; (♀) 1 in. 10 lin.—2 in. 1 lin.

♂ *Dark-brown, tinged with yellow-ochreous; a common submarginal darker line; fore-wing with a small, black, white-pupilled, subapical ocellus, ringed with pale dull ochrey-yellowish, and (usually) a larger, similar, less distinct ocellus between first and second median nervules. Fore-wing:* beyond extremity of discoidal cell, an indistinct, rather suffused, short, transverse, dull ochrey-yellowish streak; subapical ocellus between radial nervules; between the two ocelli a more or less indistinct dull pale-ochrey-yellowish suffusion; lower ocellus sometimes very indistinct, and almost as small as the upper one,—rarely quite obsolete; a small elongate sac touching lower edge of submedian nervure, about middle. *Hind-wing:* without markings; along costa a smooth glistening greyish-white space, wider nearer base, and on its lower edge, springing from subcostal nervure close to base, a tuft of long whitish hairs, succeeded by a similar tuft of rather shorter fuscous hairs on second subcostal nervule. UNDER SIDE.—*Basal halves of wings dark-brown (darker than upper side), sharply defined externally by a thin, creamy-yellowish, slightly-sinuate streak, from costa of fore-wing to inner margin (near anal angle) of hind-wing;* outer halves very pale yellowish-brown, marked with distinct white-pupilled black ocelli, with yellow iris encircled with dark-brown; an inner sharply-dentated and an outer slightly-sinuated submarginal dark-brown streak common to both wings; surface generally, but especially outer portion, with a more or less distinct violaceous gloss. *Fore-wing:* across middle of discoidal cell a narrow pale-brown streak with darker edges (often indistinct and sometimes obsolete); a little before this streak an all but obsolete similar shorter one; lower ocellus large and conspicuous; occasionally one or two minute (usually imperfect) ocelli adjoining each of the two constant ocelli; beyond the pale streak bounding dark basal half, some more or less developed brown clouding, which, uniting with the enlarged lower portion of the inner submarginal streak, forms an almost complete ring about (but at some little space from) the larger ocellus; a rather wide inner-marginal space, from base to beyond middle, shining-silvery, marked with the same little sac that is seen on the upper side. *Hind-wing:* seven ocelli on disc, in a series from near apex to close to anal angle, of which the first, fourth, fifth, and sixth are of moderate size and the others much smaller; before and beyond these ocelli there is some more or less developed brown clouding of the same character as that in fore-wing.

♀ *Considerably larger, paler. Fore-wing:* lower ocellus always present, better defined; in some examples, a minute third ocellus immediately above the larger one. UNDER SIDE.—*Basal halves not nearly so dark, and with the paler outer halves tinged with ochreous-yellow. Fore-wing:* from one to three of the minute additional ocelli always present; streak across cell usually better marked. *Hind-wing:* fifth ocellus rather markedly larger than the rest; before middle, a rather indistinct dark transverse stria, pale-edged interiorly.

VAR. A. (♂ and ♀.—*M. Evenus*, Hopff.)

Upper side as above described. *Under side in both sexes with the lower ocellus of fore-wing smaller, and all the other ocelli very much smaller,—in some specimens extremely minute;* with the common pale streak less defined in the hind-wing, and with the brown clouding beyond the streak almost obsolete except near large ocellus of fore-wing; the paler outer areas (and sometimes also the basal half of hind-wing) more or less suffused with violaceous-grey.

The larger size, darker colour, more distinct and defined space of yellowish near subapical ocellus of fore-wing, and total want of the lower ocellus in the same wing, in Hewitson's figure of the upper side of his *Safitza*, led me to dissociate from it the *Eusirus* of Hopffer; but the figure of the under side of *Safitza* in Hewitson's *Exotic Butterflies* shows that the two forms cannot be kept apart, although the latter gives a more defined apical pale space in fore-wing and considerably larger ocelli (especially in hind-wing) than I have ever met with in Hopffer's form. Dewitz (*Nov. Act. Leop.-Carol.-Deutsch Akad. Naturf.*, xli. p. 176, 1879) states that in the collection of the Berlin Museum *Eusirus* is by Hopffer himself marked as synonymous with *Safitza*. My identification of *M. injusta*, Wallengr., with the *Eusirus* of Hopffer is confirmed by the examination of a typical specimen of the former lent to me by the Royal Stockholm Museum, through the kindness of Mr. P. O. C. Aurivillius.

The *Variety* (*M. Evenus*, Hopff.) is linked to *Eusirus* proper by several specimens of both sexes from the Cape Colony and Natal, in which all the ocelli of the hind-wing, though very small (or even minute), are perfect and distinct. *M. Saga*, Butl. (*Cat. Sat. Brit. Mus.*, p. 130, pl. iii. f. 1, 1868), from Sierra Leone, is apparently very close to the *Evenus* form, but the suppression of the ocelli extends even to the lower ocellus of the fore-wing, which is quite minute.

At Knysna, which I believe is the southern and western limit of *Mycalesis* in the Cape Colony, I found the *Evenus* form predominant, specimens with well-developed under-side ocelli rarely occurring; but from Grahamstown eastward, and in Natal, the contrary appears to be the case, the examples that I met with being either of the *Eusirus* form or near it. Colonel Bowker has, however, sent a set of twelve of the former from D'Urban, Natal, including the paired sexes (the ♂ with ocelli a little better shown than in the ♀) taken in 1879.

Hewitson's type of *Safitza* had no other locality than "Africa" attached to it, but Mr. Butler (*loc. cit.*) recognises the species as occurring in Congo and at Natal. It seems to be most nearly allied to the West-African *M. Evadne*, Cramer (*Pap. Exot.*, t. ccxxii. ff. E, F), as regards the under-side markings, but has the streak before middle almost obsolete, and quite wants the purple gloss on the upper side of the wings, while the fore-wing has on the upper side an ocellus lacking altogether in *Evadne*.

This butterfly is only found in woods and patches of "bush," preferring the thickest shades, and delighting to settle on dead leaves and twigs in the narrow footpaths. In such situations it is difficult to distinguish when at rest, its sombre colouring agreeing so well with surrounding objects. The flight is weak and close to the ground, and two or three specimens may often be observed flying round together in small circles, and then abruptly settling. I have noticed a female quietly seated with four or five males excitedly circling about her; and the instant one of the males settled, all the others would do so, when, after a little jostling, off they would all start again. It has been recorded as occurring in every month of the year except June and July.

Localities of *Mycalesis Safitza*.

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Knysna. Plettenberg Bay.
    b. Eastern Districts.—Grahamstown. Peelton, near King William's Town (*W. S. M. D'Urban*). Cove Rock, near East London (*W. S. M. D'Urban*).
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Avoca and Lower Umkomazi (*J. H. Bowker*).
    b. Upper Districts.—Pietermaritzburg (*Miss Colenso* and — *Windham*).
  F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).
II. Other African Regions.
  A. South Tropical.
    a. Western Coast.— "Angola (*Pogge*)."—Dewitz. "Angola: Loanda (*R. Meldola*)."—Butler. "Congo: Kinsembo (*H. Ansell*)."—Butler.
    b. Eastern Coast.—"Querimba."—Hopffer.

27. (2.) **Mycalesis perspicua**, Trimen.

Mycalesis perspicua, Trim., Trans. Ent. Soc. Lond., 1873, p. 104, pl. i. f. 3 [♂].

Exp. al., (♂) 1 in. 7–10 lin.; (♀) 1 in. 10 lin.

Pale-brown, with very clearly marked, white-pupillate, black ocelli in yellow-ochreous rings; common to both wings, a slightly paler shade of ground-colour beyond an indistinct line about middle, and three parallel, hind-marginal, dark lines, of which the outermost is on the edge next to cilia. *Fore-wing:* a small ocellus between radials; a large one on second and first median nervules, its ring extending above and below those nervules respectively. *Hind-wing:* two good-sized ocelli between third and first median nervules; a small one above third median nervule; occasionally a minute indistinct ocellus near anal angle. UNDER SIDE.—*Pale greyish-ochreous, closely hatched and irrorated with brown;* two reddish-brown transverse lines, one before, the other beyond middle; the outer line immediately succeeded by *a conspicuous pale-yellow stripe,* externally ill-defined; hind-marginal streaks well-marked; all the ocelli in well-marked rufus-brown rings encircling the yellow-ochreous rings. *Fore-wing:* the two ocelli answer to those on upper side. *Hind-wing:* seven ocelli in sub-marginal row, of which the fourth and fifth (between third and first median nervules) are considerably larger than the rest, the three above them small (about equal in size), and the seventh (at anal angle) much the smallest, but clearly defined.

Both sexes, but especially the ♂, present a variation which has all the ocelli on the under side of the wings indistinctly marked, and much smaller than usual, or all but obsolete,—only the white pupil of the large fore-wing ocellus being conspicuous; the yellow stripe beyond middle deeper in tint; and the transverse line before middle immediately preceded by some yellow clouding.

The close brown lines or hatchings and conspicuous pale-yellow stripe of the under side readily distinguish this butterfly from *M. Safitza,* Hewits., apart from its much paler colouring and three or four distinct hind-wing ocelli on the upper side. Its other allies are *M. Mineus,* Linn., and *M. Ostrea,* Westw. (= *Otrea,* Hübn. *nec* Cram.); but it differs from the former by the much broader stripe of the under side, and from both by the number (three) and distinctness of the ocelli on the upper side of the hind-wings. The two species just named are natives of China and North India respectively.

I think it very probable that *M. Victorina,* Westw. (App. to Oates' *Matabeleland,* p. 350, n. 58, 1881), from the Zambesi (near Victoria Falls), is identical with *M. perspicua;* but the diagnosis given is not sufficiently detailed to admit of certainty on this point. If not identical, it must be a very close ally.[1]

I discovered this *Mycalesis* at Port Natal, taking a single example (♀), on 3d August 1865, flitting about long grass in some rough ground at the base of the slope near D'Urban, where the Botanic Garden is situated. On the 4th March 1867 I again met with the species at Mapumulo, between the Umvoti and Tugela Rivers, capturing one of each sex among grass at the bottom of a deep ravine. Captain H. C. Harford, who sent me a ♂ from Pinetown, taken in January 1869, also noted the butterfly as occurring among long grass. In Natal it is rather a scarce species, Colonel Bowker having forwarded single specimens only from Avoca in August 1878 and from the Lower Umkomazi in February 1883 respectively. Its range northward must, however, be great, as, besides examples found between the Limpopo and Zambesi by Mr. T. Ayres, the South-African Museum possesses a pair taken by Colonel Bowker at Zanzibar in September 1878. These specimens, as well as four others taken by M. Selous in North-West Transvaal, all have the ocelli well developed, and quite agree with the Natalian type.

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[1] I have received from Mr. F. C. Selous two ♂s of a *Mycalesis* taken on the Shashani River, Makalaka Country, which only differ from *Perspicua* in being (1) greyer on upper side, with (2) ocelli in duller rings and only two in hind-wing; and on under side (3) a greyer ground-colour without any hatching or irroration, (4) a much narrower common pale-yellow streak,—in one of the examples *linear,* and (5) the ocelli all encircled with neatly defined pale-yellowish linear wings,—especially perfect in fore-wing. This may possibly be the *Victorina* of Westwood.

Localities of *Mycalesis perspicua.*

I. South Africa.
  E. Natal.
    a. Coast Districts.— D'Urban. Avoca and Lower Umkomazi (*J. H. Bowker*). Pinetown (*H. C. Harford*). Mapumulo.
  F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).
  H. "Delagoa Bay."—Kirby, Cat. Hewitson Coll.
  K. Transvaal.—Marico River (*F. C. Selous*).

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—"Shire River." — Kirby, Cat. Hewitson Coll. Zanzibar (*J. H. Bowker*).
    *b*1. Eastern Interior.—Between Limpopo and Zambesi Rivers (*T. Ayres*).

28. (3.) **Mycalesis Simonsii**, Butler.

♂ ♀ *Mycalesis Simonsii*, Butl., Ann. and Mag. Nat. Hist., 4th Ser., xix. p. 458 (1877).

Exp. al., (♂) 1 in. 78 lin.; (♀) 2 in.

♂ *Very pale ochre-yellow; fore-wing slightly deeper in tint, and with a costal-apical bordering of reddish-brown;* common to both wings, a fine transverse discal darker line, relieved externally by a lighter line or streak, and two slightly-sinuated submarginal darker lines (very faintly marked in hind-wing). *Fore-wing:* brown border commencing faintly at base, continued narrowly along costa as far as extremity of discoidal cell, and thence darkening and widening into a good-sized apical patch, ill-defined interiorly, which extends along hind-margin as far as end of second median nervule; inner of two submarginal lines developed into a strongly-marked streak of brown, darker than that of apical patch; a small black, white-pupilled, yellow-ringed ocellus near apex between the radial nervules, and a similar, much larger, conspicuous ocellus on disc, between first and second median nervules. *Hind-wing:* a discal series of three minute, similar, but very imperfect non-pupillate ocelli between third median nervule and submedian nervure. UNDER SIDE.—*Duller, less yellow (especially in basal half), very finely speckled and hatched with brownish; common discal streak much better marked than on upper side, reddish-brown, exteriorly relieved by a pale-yellow line;* submarginal lines almost obsolete; a common indistinct transverse brown line before middle. *Fore-wing:* ocelli much less distinct than on upper side, the subapical one minute, the large one consisting of a grey spot, enclosing an enlarged shining-white pupil, and obscurely ringed with yellow. *Hind-wing:* a discal row of seven very small grey ocelli from costa to anal angle,—the second, third, and seventh being minute or almost obsolete, and the pupils of all indistinct.

♀ Similar, but brown border less apparent along costa, and more rufous apically. UNDER SIDE.—Somewhat darker, with a rufous tinge; the fine hatching closer and more distinct; yellow external edging of common discal streak wider, more conspicuous.

The dull-yellow ground-colour of this *Mycalesis* gives it a very peculiar aspect, but its alliance to the similarly-tinted *M. Eliasis*, Hewits., noted by Mr. Butler (*loc. cit.*), is more apparent than real, *Simonsii* being in fact much closer to *M. perspicua*, mihi. This will be seen on comparing the under sides, that of *Simonsii* being very close to that of those examples of *Perspicua* in which the ocelli are almost suppressed. In *M. Eliasis* (a Congo species) the ocelli are well developed on the upper side of both wings, but are strikingly distinct and numerous on the under side; and they present the more important character of *being situated in quite a different position, viz., quite close to the hind-margin.*

M. Simonsii was described from specimens brought from Lake Nyassa, which appear from Mr. Butler's description to have been a little darker than those which I have received from Mashunaland and the Zambesi, and to have as many as six spots in the discal series on the upper side of the hind-wing.

I include the butterfly in my list on the strength of an example received in 1875 from Mr. F. H. Barber, who took it on the Crocodile (or Upper Limpopo) River on the north-west boundary of the Transvaal, at a locality very near the Tropic, but believed to be a little to the southward. Though I could not identify this individual with any described *Mycalesis*, it was too much injured to enable me to diagnose it as a new species.

Localities of *Mycalesis Simonsii*.

I. South Africa.
  K. Transvaal.—Upper Limpopo River (*F. H. Barber*).

II. Other African Regions.
  A. South Tropical.
    *b*1. Eastern Interior.—Inyoutete River, Mashunaland, and Zumbo, north bank of Zambesi River (*F. C. Selous*). "Lake Nyassa (*F. A. A. Simons*)."—Butler.

GENUS MELANITIS.

Melanitis, Fabricius, "Illiger's Mag., vi. p. 282 (1807);" Butler, Cat. Sat. Brit. Mus., p. 1 (1868).
Hipio, Hübner, Verz. Bek. Schmett., p. 56 (1816).
Cyllo, Boisduval, "Voy. Astrolabe, Lep., p. 140 (1832)," and Faune Ent. de Madag., &c., p. 57 (1833); Westwood, Gen. Diurn. Lep., ii. p. 360 (1851); Trimen, Rhop. Afr. Aust., ii. p. 186 (1866).
Gnophodes, Westw., Gen. Diurn. Lep., ii. p. 363 (1851); Trimen, Rhop. Afr. Aust., ii. p. 189 (1866).

IMAGO.—*Head* small, clothed with short dense hair; *eyes* very prominent, smooth; *palpi* short, compressed, ascendant, densely clothed with long scales, the terminal joint short, moderately acute; *antennæ* rather short, slender, only very slightly and gradually thickened terminally. *Thorax* moderately robust, elevated dorsally; covered with short down on breast, but hairy on back, especially posteriorly. *Wings* large and broad, more or less angulated. *Fore-wings* produced apically, usually angulated at extremity of second discoidal nervule, beneath which hind-margin is excavated (being moderately dentate generally); costa strongly arched; inner margin nearly straight (convex in ♂ of some species); first and second subcostal nervules originating before extremity of discoidal cell,—the subcostal nervure and all its branches situated very close to costa; discoidal cell long and broad; upper and middle disco-cellular nervules both very short (so that the two radial nervules arise very near each other), but lower one very long, with an inward curve in its upper part; in ♂ of some species a large oval tuft of long hairs, directed outwardly, lying between first median nervule and submedian nervure, near base. *Hind-wings* produced inferiorly, more or less prominently angulated at extremity of third median nervule, and with a smaller projection at extremity of first median nervule; hind-margin moderately dentate generally; anal angle prominent; costa prominent at base, but thence only slightly arched or nearly straight; costal nervure extending almost to apex; discoidal cell narrow, rather short,—the lower disco-cellular nervule considerably longer than the upper, slightly bent just below origin of radial nervule, and meeting third median nervule at acute angle; inner margin produced to form a wide channel in its basal half, so as to cover almost all the under surface of the abdomen, but excavated inferiorly. *Fore-legs* of ♂ very small, rather thinly clothed with short rough hair on tibia and short tarsus; those of ♀ considerably larger, not hairy but scaly, with the tarsus as long as the tibia, and indistinctly articulated. *Middle* and *hind legs* moderately thick, smooth and scaly; tibiæ with a few thin spines inferiorly, the terminal spurs very short; tarsi with a few very short spines beneath.

LARVA.—Elongate, thickened about middle. Head large, surmounted by a pair of straight spinulose horns. Last segment bearing a pair of long, slightly divergent, bristly spikes, directed posteriorly.

Pupa.—Smooth, thick, rounded (especially about middle); cephalic prominence obtuse, dorso-thoracic prominence rather acute.

I have felt obliged to unite *Gnophodes* to *Melanitis*, not being able to discover any characters warranting its being held generically distinct. Westwood himself (*loc. cit.*) doubted the propriety of treating it as a separate genus, noting that the tuft of hair and dilated inner margin of the fore-wings of the ♂ were the chief distinguishing features, and that the former character was wanting in the West-African *G. Morpena* (= *Pythia*, Fab.) The only other differences from *Melanitis* that I have detected are the longer upper and middle disco-cellular nervules in the fore-wings, and the less curved lower disco-cellular nervule in both fore and hind wings.[1]

The rather large and striking insect, *M. Leda* of Linnæus, which is the type of this genus, is one of the most variable of known butterflies, and has an immense geographical range over the Ethiopian, Oriental, and Australian Regions. Although several Indian and Malayan variations are still marked in collections as distinct species, I am most strongly disposed—looking to the large number of so-called species which have, with common consent, been sunk as varieties of *Leda*, and knowing the remarkable extent to which this butterfly varies, alike in outline of wings, pattern, and colouring in one and the same locality even (*e.g.*, Port Natal)—to think that there exists in reality (besides the species hitherto referred to *Gnophodes*) but one *Melanitis*, spread over all the warmer parts of the Old World.

The nocturnal habits of *Melanitis* lend it an additional interest. During the day it frequents the darkest and shadiest spots in woods or plantations, sitting on the ground or among dead leaves, where its under-side colouring well conceals it from notice. When roused from these retired spots, it takes a short but wild, uneven, flapping flight, and drops again into some shaded nook. At sunset it becomes active, and ventures into open spots, where it may be observed sporting about until dark.

29. (1.) **Melanitis Leda** (Linnæus).

Papilio Leda, Linn., Syst. Nat., i. 2, p. 773, n. 151 (1767).
,, ,, Dru., Ill. Nat. Hist., i. pl. xv. ff. 5, 6 (1770).
,, ,, Cram., Pap. Exot., iii. t. cxcvi. ff. C, D, and iv. t. ccxcii. f. A (1782).
,, ,, Fab., Ent. Syst., iii. 1, p. 108, n. 333 (1793).
Oreas marmorea Leda, Hübn., Samml. Exot. Schmett., i. t. 91 (1806).
Satyrus Leda, Godt., Enc. Meth., ix. p. 478, n. 4 (1819).

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[1] Mr. A. G. Butler (*Cat. Sat. Brit. Mus.*, p. 5, pl. ii. f. 1) describes and figures an Indian butterfly which he names *Melanitis Gnophodes*, with the following note, viz.:—"The ♂ of this species resembles *Gnophodes Parmeno* on the upper side; the ♀ has a brighter orange band, and resembles the Natal form" [afterwards named by Mr. Butler *G. diversa*] "of the same insect. It may possibly be a link between the two genera, though a true *Melanitis*."

Cyllo Leda, Boisd., Faune Ent. de Madag., &c., p. 58, n. 2 (1833).
Melanitis Leda, Horsf. and Moore, Cat. Lep. H.E.I.C. Mus., p. 222, n. 461 (1857).
Papilio Bankia and *P. Solandra*, Fab., Syst. Ent., pp. 499, 500, nn. 243, 244 (1775).
Papilio Ismene, *P. Mycena*, *P. Phedima*, and *P. Arcensia*, Cram., Pap. Exot., i. t. xxvi. ff. A, B (1779); and iv. t. ccxci. f. F; and t. ccxcii. ff. B, C (1782).
Cyllo Leda, Trim., Rhop. Afr. Aust., ii. p. 186, n. 106 (1866).
Melanitis Leda, Butl., Cat. Satyr. in Coll. Brit. Mus., p. 1 (1868).
Melanitis Leda and *M. Ismene*, Moore, Lep. Ceyl., i. pp. 14, 15, pl. 10, ff. 1, 2 (1880).

LARVA AND PUPA.

(*Java.*) Horsf. and Moore, Cat. Lep. H.E.I.C. Mus., pl. vi. ff. 8, 8a (1857).
(*Ceylon.*) Moore, Lep. Ceyl., i. pl. 10, ff. 2a, 2b (1880). [As "*M. Ismene*, Cram."]

Exp. al. (♂) 2 in. 8 lin.—3 in. 1 lin.; (♀) 2 in. 10 lin.—3 in. 6 lin.

Dull-brown; sometimes more or less suffused with fulvous; hind-margins in most specimens with an ill-defined paler-brown or dull-greyish narrow border, thinly hatched with short dark lines, and tinged with a faint violaceous gloss. *Fore-wing:* near apex, between second discoidal and second median nervules, a large compound black ocellus, outwardly enclosing two conspicuous white pupils, of which the upper is almost always the larger; fulvous varying from a scarcely-perceptible tinge, bordering upper and inner edges of ocellus, to a conspicuous discal patch, commencing close to costa above ocellus, extending much below ocellus, and shading off into discoidal cell, and nearly to base. *Hind-wing:* near hind-margin, between discoidal and first median nervules, from one to three ocelli (of which that nearest anal angle is the largest, and often perfect when the others are half-obsolete or wanting), properly black, white centred, and ringed with faint ochreous, but often only represented by whitish dots, or all but obsolete; fulvous very indistinct when present, and only forming an ill-defined tinge on disc. *Cilia* inconspicuously varied with whitish. UNDER SIDE.—*Excessively variable; scarcely two specimens alike.* Paler than above (sometimes pale ochreous), always more or less markedly hatched or irrorated with darker short lines or dots; typical markings, a common dark, transverse streak from costa of fore-wing before middle to inner margin of hind-wing beyond middle, a similar streak confined to fore-wing from costa beyond middle to near posterior angle, and a row of bluish-white pupillate ocelli, ringed with pale yellow, in both wings near hind-margin; often a common dark transverse streak not far from bases. *Fore-wing:* properly five ocelli, of which the fourth (between third and second median nervules) is the largest, and often pretty well marked when the others are obsolete or wanting. *Hind-wing:* properly six ocelli, of which the first (between subcostal nervules) and the fifth (between second and first median nervules) are the largest, and the sixth bipupillate.

The variations of the under side in this species are so numerous, and so finely graduated into each other, that it is impossible to fix upon any *variety* properly so termed, *i.e.*, a constant form differing from the type. The ground-colour is tinged with ochre, pinkish-red, dark-brown, or purple-grey; the transverse stripes wanting, indicated by detached dark blotches, or broadly shaded with dark-brown internally (while the ground beyond them is very pale); the ocelli very conspicuous in both wings or one wing to their full number, half wanting, ill-defined, without rings, without black, very indistinct, or barely traceable as whitish or pale dots. The ocellus of upper side of fore-wing is sometimes compounded of three black spots. The *outline* of the wings also varies much, especially as regards the *fore-wing*, the hind-margin of which presents every gradation between being almost straight (save for a slight prominency in apical region), and the assumption of an almost falcate form.

LARVA.—Bright yellow, shaded with greenish; nine longitudinal green streaks, viz., one central, dorsal; and on each side two thin ones (subdorsal and lateral), one wider lateral, and one thin just above legs. Cephalic horns divergent, projecting almost directly forward, only slightly ascendant at extremity. Caudal processes about as long as cephalic horns, but stouter at base, acuminate, and less divergent. The surface generally is transversely ribbed, and very slightly pubescent. Feeds on the "Bush Guinea Grass."

Mr. W. D. Gooch sent me the notes and rough drawing from which the above description is made. He observes that the Larva was not uncommon on the Natal Coast, and was invariably found on the under side of the leaves of its food-plant, generally at the base with its head downward. Many of the specimens observed were ichneumoned.[1]

PUPA.—Mr. Gooch has given me no record of this stage. The figures of the Indian and Cingalese specimens above quoted give the pupa as green, rather paler on the wing-covers, which bear two or three blackish lines, probably indicating some of the nervures. The Indian pupa is represented as attached to a thin stalk, the Cingalese to the edge of a broad leaf of a grass.

In my *Rhopalocera Africæ Australis* (*l. c.*), I recorded my reasons for adding *Bankia*, Fab., to the array of synonymes attaching to this exceedingly variable species. In January of the following year (1867), Mr. A. G. Butler, in a paper contributed to the *Annals and Magazine of Natural History*, retained *Bankia* as a variety of *Leda*, and added to the list *M. Helena*, Westw., from "West Africa." He gave at the same time an interesting analysis of the various forms of the butterfly contained in the Collection of the British Museum from all the warmer parts of the Old World, specifying no fewer than twenty-eight recognisable variations. In his British Museum *Catalogue of Satyridæ* (issued in 1868), pp. 1–3, he reduced these with judgment to nine, at the same time remarking, "I have found it utterly impossible to separate the above forms specifically from one another; slight differences in form and in the colouring of the upper side are the only guides by which to distinguish the different named varieties; but even these are not constant. The true *Leda*, however, appears to occur only in India and the Indian Islands; but the slight variety *Ismene* (including *Mycena* and *Arcensia*) has a much wider range, being found in India, Java, Australia, and Africa. The (?) *Taitensis* of Felder links this form to *Solandra;* the latter and *Banksia* appear to exist only in Australia and Africa, whilst *Phedima* seems to be strictly confined to Australia."

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[1] It should be observed that the larva of the Oriental *Leda* is represented as greener than Mr. Gooch describes that of the Natal *Leda* to be; and also that in the figure in the *Lepidoptera of Ceylon*, above quoted, the larva is depicted as having the cephalic horns rusty-red and perpendicular instead of greenish-yellow and porrect, and as possessing on each side of the face a vertical, black, outwardly white-edged stripe running from the base of the horn.

As supplementing this account, I may mention that I have captured at D'Urban, Natal, true *Leda*, indistinguishable from the type inhabiting Continental India, and have received other specimens from the same locality, one of which precisely agrees with Cramer's figure of *Leda* (pl. ccxcii. A, under side) from India. In May 1879 Colonel Bowker forwarded a considerable number of specimens taken near D'Urban; these exhibited every variety of tint and marking on the under side, and one of them (a ♂) was quite like Cramer's figure of *Arcensia* (C on the same plate), while another ♂, except for a little more fulvous on the upper side, closely agreed with Cramer's figures of *Ismene* (pl. xxvi. ff. A, B). In some of the Natal and Madagascar examples, of both sexes, the fulvous covering is very largely developed on the upper side, extending almost to the bases of the wings. Throughout the several variations, the ♀ always has the fore-wings more angulated than those of the ♂.

The specimens which I met with in Mauritius (see *Trans. Ent. Soc. Lond.*, 1866, p. 336) correspond pretty nearly with Natalian examples, including typical *Leda*, with scarcely a tinge of rufous on upper side, and with the under-side ocelli largely developed, and others with a very rufous upper side, and the under-side ocelli obsolete.

I found this butterfly rather scarce near D'Urban during the summer of 1867, only taking a few individuals in the month of February; but it is evidently numerous there in some seasons, the late Mr. M'Ken and Colonel Bowker having sent down many specimens. Shade-loving habits are carried to their farthest point by this *Melanitis*, which rests among the dead leaves, which its wonderfully-variable under surface so closely resembles, in the darkest parts of woods, and seldom moves during the daytime unless roughly disturbed. On one wet and gloomy day, I took a specimen sitting out in the open on the bare mould of a flower-bed; but, as a rule, it is only about sunset that *Leda* begins to fly heavily about near the ground. In Mauritius, where the species was abundant, I observed these butterflies chasing each other at dusk until it became too dark to see their movements any longer. In Moore's *Lepidoptera of Ceylon* similar habits are recorded of *Leda* by Mr. Hutchison, who notes that it "flies at dawn and dusk of the evening, rarely by day" (p. 15). When aroused in the daytime, *Leda* seldom keeps on the wing for more than a few yards' distance, flying in a most irregular, flapping, heavy manner, and settling again on the ground or on dead leaves.

Localities of *Melanitis Leda*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban.
    b. Upper Districts.—Estcourt (*J. M. Hutchinson*).
  F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).
  K. Transvaal.—Upper Limpopo (*F. C. Selous*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—Damaraland (*C. J. Anderssòn* and *J. A. Bell*). "Angola (*Pogge*)."—Dewitz. Congo (Coll. Brit. Mus.) "Chinchoxo, Loango (*Falkenstein*)."—Dewitz.
    b. Eastern Coast.—Zambesi (*Rev. H. Rowley*).—Coll. Hope Mus. Oxon. "Querimba."—Hopffer.
    bb. Madagascar (*V. de Robillard*). "Bourbon."—Boisduval. Mauritius. "Rodriguez (G. Gulliver)."—A. G. Butler.
  B. North Tropical.
    a. Western Coast.—Ashanti and Sierra Leone (Coll. Brit. Mus.)
    b. Eastern Coast.—"Shoa, Abyssinia (*Antinori*)."—Oberthür.

IV. Asia.
  A. Southern Region.—India (Nepaul, Silhet, Ceylon:—Coll. Brit. Mus.; Scinde:—"Kurrachee," C. Swinhoe; Bengal:—Boisduval and Felder); Burmah (Moulmein:—Coll. Brit. Mus.) "China."—Drury and Boisduval. Philippine Islands (Manilla: *Lorquin*).
  B. Malayan Archipelago.—Java, Borneo, Celebes, and Ceram (Coll. Brit. Mus.)

V. Australia.—Queensland (Brisbane: *W. H. Miskin*).

VI. Oceania.—"Otaheite."—Fabricius and Felder.

30. (2.) **Melanitis diversa**, (Butler).

Gnophodes Parmeno, Trim. [part], Rhop. Afr. Aust., ii. p. 190, n. 107 (1866).
  „ „ Butl. [part], Cat. Satyr. Coll. Brit. Mus., p. 6 (1868).
  „ *diversa*, Butl., Ann. and Mag. Nat. Hist. (5), v. p. 333 (1880).

Exp. al., 2 in. 11 lin.—3 in. 3 lin.

Dull-brown, greyish-tinged for the greater part, but darker externally (especially in fore-wing); a curved ochre-yellow transverse bar crossing fore-wing in its darker outer portion. Fore-wing: costa speckled with ochre-yellow along its edge; curved bar commencing rather broadly on costa beyond middle, and narrowing to a point at posterior angle: its inner edge distinct, with three inter-nervular excavations, its outer edge ill-defined below second radial, whence the bar is more or less one with a narrow hind-marginal bordering of ochre freckled with short blackish lines and atoms. *Hind-wing:* a very narrow yellow-ochreous edging, freckled with blackish throughout, but more thickly so in its inferior portion, from costa beyond middle to anal angle; immediately before it, between third median nervule and anal angle, a somewhat indistinct clouding of pale-grey thickly hatched with short black lines. Cilia of fore-wing brown mixed with whitish; of hind-wing whitish with very thin nervular brown interruptions. UNDER SIDE.—*Paler-brown; apical area of fore-wing and costal border of hind-wing pale cream-colour;* the whole surface irregularly hatched and irrorated with dark-brown short lines and atoms, more conspicuous on the creamy parts. *Fore-wing:* costa transversely marked with irregular creamy lines uniting into four indistinct cellular fasciæ; creamy apical area marked with a row of four minute, almost obsolete, imperfect, dark-brown annulets between upper radial and second median nervule at some distance from hind-margin, which is tinged with brown in its middle portion. *Hind-wing:* costal border bounded by subcostal nervure and its first nervule (except for a very slight infringement on discoidal cell close to base), its costal half much hatched with brown, but the rest usually clear cream-colour; all the remaining area brown strongly tinged with violaceous; a more or less interrupted darker-brown curved fascia, commencing widely on first subcostal nervure, narrowing into a linear form between extremity of discoidal cell and first median nervule; a submarginal row of six annulets like those in fore-wing but larger, and their creamy centres more conspicuous (especially the first, whose ring is more or less suffusedly widened), between first subcostal and inner margin, the last being a double spot; a narrow hind-marginal ochreous edging.

The sexes do not differ to any appreciable extent in either marking or colouring.

I have followed Mr. Butler (*loc. cit.*) in treating this very pronounced Southern form as distinct from *M. Parmeno* (Doubl.) of the West Coast of Africa.[1] Mr. Butler has not characterised *M. diversa*, but its most obvious distinction is its much greater size, *Parmeno* only expanding 2 in. 5–8 lin. In markings it conspicuously differs in the comparatively broader bar of the fore-wing, which in the ♀ *Parmeno*, moreover, is indistinct whitish instead of ochre-yellow, and more developed border of the hind-wing; while the general ground of the wings is paler and duller above. The sexual badge of the ♂ is more oval, more densely hairy, and not circumscribed by a pale ring. On the under side, the pale apical patch in the fore-wing in *Diversa* is a good distinction,—that part in *Parmeno* being but little paler than the rest of the wing.

There is much similarity in outline, size, and general appearance between *M. diversa* and *M. Leda*, and the imperfect blind ocelli of the under side are in number and position precisely the same in both species (though replaced in the typical *Leda* by complete ocelli), but the former seems as constant to one pattern of colouring and marking as the latter is variable. The absence of any ocellate spots on the upper side, combined with the position of the conspicuous ochre-yellow bar on the fore-wings, readily distinguish *Diversa*, which is further noticeable for longer projections of the hind-wings, and for the upward and outward curve of the longest projection (at the end of third median nervule). The ♂ is also at once recognisable by the conspicuous sexual badge on the fore-wings—a feature totally wanting in the ♂ *Leda*.

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[1] I captured a ♀ *Parmeno* at sea, about 190 miles due West of Sierra Leone, and saw two other examples of the same species, on the 24th November 1871. The day was perfectly calm; but quite a variety of Lepidoptera and other insects came about the ship. I was much surprised to find such shade-loving inactive *Satyrinæ* as this butterfly and several of two species of *Mycalesis* among the visitors from the distant shore.

LARVA.—"Ground-colour yellow; a median dorsal green stripe, and some narrower ones on each side, from head to tail. Both head and tail forked. About two inches long."—*J. H. Bowker's* description of two specimens found at Northdene, near Pinetown, Natal, feeding on "Ribbon grass," May 1885.

PUPA.—Bright grass-green throughout, semi-transparent, surface like shining wax. No markings of any kind; rather paler on wing-covers. Length, 10 lines. Thick and rounded, especially the abdomen, which is dorsally globose and very strongly convex. The main dorsal prominence highly ridged and rather acute. Head blunted, not bifid, but with two minute pointed tubercles on eye-covers.

I received the pupa here described on 22d May 1885, from Colonel Bowker, who wrote that it was developed from one of the two larvæ above mentioned. It was suspended by a well-developed caudal stalk to a small but dense silken web on the under side of a leaf of broad ribbed grass. The imago, a fine ♀ of *M. diversa*, appeared on May 31st. Colonel Bowker subsequently sent me a crippled *M. diversa* produced from the other pupa, which he retained in Natal.

This *Melanitis* seems considerably rarer than *M. Leda* in Natal. I met with only a few examples near D'Urban and Verulam in February 1867; their haunts and habits were precisely those of *Leda*, and they were quite as difficult to see when settled among dead leaves and undergrowth in the shade of the woods.

Localities of *Melanitis diversa.*

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Pinetown (*J. H. Bowker*).

GENUS LETHE.

Lethe, Hübner, Verz. Bek. Schmett., p. 56 (1816); Butler, Cat. Sat. Brit. Mus., p. 114 (1868).
Debis, Westwood, Gen. Diurn. Lep., ii. p. 358 (1851).

IMAGO.—*Head* rather wide, hairy; *eyes* large, with a close clothing of short hair; *palpi* long, very much flattened laterally, separated but not divergent,—the second joint, very long, with a few short appressed hairs above and a smooth dense fringe of hair beneath,—the terminal joint minute, slender, smooth; *antennæ* short, very gradually incrassated. *Thorax* short, pilose, stout. *Fore-wings* in some species (*L. Europa*, (Fab.), and allies) produced apically; costa rather strongly arched; apex rounded; hind-margin entire or bluntly dentate; inner margin straight; costal nervure in a good many species moderately or slightly swollen at base; first and second subcostal nervules given off before extremity of discoidal cell, not far apart; discoidal cell of moderate length, wide near extremity, closed rather obliquely, the third disco-cellular nervule forming a somewhat acute angle at junction with third median nervule. *Hind-wings* broad; costa very prominent at base, but beyond it only very slightly curved; hind-margin more or less deeply scalloped, usually with a marked projection, or even a short tail, at extremity of third median nervule; discoidal cell very short superiorly, the disco-cellular nervules being curved and very oblique, and the lower one meeting the median nervure at a very acute angle just at the origin of the second median nervule. *Fore-legs* of ♂ not very small, slender; the tibia and short tarsal joint densely fringed with short soft hair; those of the ♀ rather larger (having a much longer imperfectly articulated tarsus), thinly clothed with hair. *Middle and hind legs* with the femur smooth, slightly downy beneath, the tibia and tarsus rather closely set with short bristles and with longer ones beneath; spurs of tibiæ rather long and slender. *Abdomen* short, not (or but little more than) half the length of the inner margin of hind-wings.

LARVA.—" (Of *D. Portlandia*) long, sub-cylindrical, longitudinally striated; the head with two erect horns; and the body terminating in two obliquely porrected points."—*Westwood, Gen. D. Lep.*, ii. p. 359.

PUPA.—" Short, thick, rather constricted across the base of the abdomen; head-case obtusely rounded."—*Westwood, loc. cit.*

Notwithstanding the distinct *facies* of the two South-African species which I here refer to *Lethe*, the slight structural differences they present do not seem to warrant their separation from that genus. The unswollen costal nervure of the fore-wings cannot be considered of much importance in a group presenting that character very feebly in many of its members; and the more obliquely-closed discoidal cell of the fore-wings and shorter one of the hind-wings are not of themselves generic distinctions. I was disposed to think that the prolongation of the costal nervure of the hind-wings to the apex was peculiar to the species under notice, but I observe that Mr. F. Moore (in his *Lepidoptera of Ceylon*, p. 16) gives this feature as one proper to *Lethe* in his definition of the genus. The blunted, sub-truncate outline of the wings and the hind-marginal contour in the South-African forms very nearly resemble those of the Japanese *L. Sicelis* and the Chinese *L. Segonax*, &c., figured by Hewitson in *Exotic Butterflies* (vol. iii.)

Of some thirty other species recorded, all but one—*Lethe Portlandia*, (Fab.), an aberrant form from the United States—are Asiatic, ranging from Ceylon to Celebes and from North India to China and Japan. The two South-African species have but a limited distribution, *L. dendrophilus*, (Trim.), being apparently found only in the wooded parts of the eastern districts of the Cape Colony and of Kaffraria, and *L. Indosa*, (Trim.), inhabiting similar tracts in Natal and the Eastern Transvaal. Both insects are above the middle size and quite similar in general colouring and marking, but *Indosa* has much brighter ochre-yellow on the disc of the hind-wings, and is further rendered very conspicuous by the possession of pure white well-defined spots (instead of the suffused ochreous ones of *Dendrophilus*) in the fore-wings. They settle on tree trunks, usually near the ground, and almost always head downward, their flight, though pretty frequent, being short and weak.

31. (1.) **Lethe dendrophilus**, (Trimen).

♂ *Satyrus dendrophilus*, Trim., Trans. Ent. Soc. Lond., 3rd Ser., i. p. 399 (1862).
♂ ♀ *Debis dendrophilus*, Trim., Rhop. Afr. Aust., ii. p. 191, n. 108, pl. 3, f. 8 (1866).
Neope dendrophilus, Butl., Cat. Satyr. Coll. Brit. Mus., p. 113, n. 3 (1868).

Exp. al., (♂) 2 in. 6–10 lin.; (♀) 2 in. 9 lin.—3 in.

♂ *Dull-brown in fore-wing, suffused with fulvous-ochreous, and with a discal row of yellow and fulvous-ochreous spots; fulvous-ochreous in hind-wing bordered with dull-brown. Fore-wing:* a fulvous-ochreous tinge over basal half and to near anal angle; beyond middle, an irregularly sinuate transverse row of seven spots, ill-defined externally, from costa to submedian nervure; the spot on costal edge whitish, the others ochreous-yellow, deepening outwardly into fulvous, elongated longitudinally, the largest between second and third median nervules; beyond these, a submarginal row of five small whitish spots, indistinctly ringed with blackish, from fourth subcostal to second median nervule; occasionally a minute sixth spot nearer costa; a pale-brown narrow hind-marginal border, divided by a dark-brown line. *Hind-wing:* fulvous-ochreous; hind-marginal border as in fore-wing, but wider, with another dark line separating it from the ground-colour; a submarginal row of seven white-pupilled, rounded, black spots, of which the second and the fourth are smaller than the rest (or sometimes wanting altogether), and the last, above submedian nervure close to anal-angle, is sometimes bipupillate; inner-marginal region pale-brownish. UNDER SIDE.—*Paler, with a slight violaceous lustre; fulvous-ochreous suffusion entirely absent. Fore-wing:* markings, similar, fainter; a dark, waved streak crossing discoidal cell, which has likewise a faint ochreous and two faint whitish transverse markings; a row of whitish spots as above, but the second distinctly ringed with black and yellow; apex and base suffused with faint brownish. *Hind-wing:* same colour as apex of fore-wing; with a strong violaceous gloss; four irregular, interrupted, brown striæ crossing basal half; row of ocelli as above, but in pale-yellow rings; two dentate stria bordering hind-margin, which is paler than rest of wing; a space inwardly bordering the ocelli, from discoidal nervule to submedian nervure near anal angle, irrorated with fuscous scales. Cilia dark-brown, interrupted with white between nervules.

♀ *Similar, but paler and duller. Fore-wing:* the spots of discal row of a much paler yellow interiorly,—the first three of them (including the yellowish-white one on costa) forming a narrow oblique bar.

Under side.—*Ground-colour of hind-wing (especially near hind-margin), and of apex and hind-margin of fore-wing, very much paler and greyer than in ♂—in one example quite hoary near hind-margins.*

This fine Satyride was first made known to me by Mr. W. S. M. D'Urban, who took it abundantly in the year 1861, in forest country near Frankfort, to the north of King William's Town. It afterwards proved to be rather widely distributed in the eastern districts near the coast, from near Grahamstown as far as the Bashee River in Kaffraria Proper. At the end of January and during February 1870, I had the welcome opportunity of observing the species at Highlands, near Grahamstown, where it was plentiful on the outskirts of woods clothing the north sides of the hills. As noticed by Mr. D'Urban, Archdeacon Kitton, and Colonel Bowker, I found that *Dendrophilus* very rarely settled on leaves, but perpetually lighted on the stems of trees, near the ground, keeping its head downward. It is a great lover of shade, seldom venturing into a spot on which the sun is shining. I once found a number of specimens sucking at moisture in a hollow part of a tree-trunk just above the surface of the ground. I was struck by the scarcity of the ♀; out of thirty-six examples taken by Messrs. F. and H. Barber and myself at Highlands, only four, or one-ninth, were ♀s; and this is the more noteworthy, because both sexes have the same haunts and habits, flitting weakly about under cover of the trees. On examining nineteen specimens from various localities in the collection of the South-African Museum, I found about the same disproportion in the relative numbers of the sexes, only two being ♀s.

Localities of *Lethe dendrophilus.*

- I. South Africa.
  - B. Cape Colony.
    - *b.* Eastern Districts.—Grahamstown. King William's Town (*H. Kitton*). Frankfort (*W. S. M. D'Urban*). East London (*P. Borcherds*).
  - D. Kaffraria Proper.—Tsomo and Bashee Rivers (*J. H. Bowker*).

32. (2.) Lethe Indosa, (Trimen).

Plate VII. fig. 1, ♂.

♂ *Debis dendrophilus,* Var., Trim., Trans. Ent. Soc. Lond., 1868, p. 285.
♂ ♀ *Debis Indosa,* Trim., *op. cit.*, 1879, p. 324.

Exp. al., (♂) 2 in. 9–11 lin.; (♀) 3 in. 3–6 lin.

♂ *Dark-brown; the fore-wing with white spots, the hind-wing with ochre-yellow disk and black ocelli. Fore-wing:* white spots rounded, of various sizes, forming two irregular transverse rows in outer half of wing; those of the inner row arranged so that four constitute a narrow oblique bar commencing on costa just beyond middle; a fifth is below and rather before the fourth and much smaller, and the sixth large and sub-ovate between second and first median nervules about as far from base as the costal commencing spot of the row; the outer row sinuated, consisting of seven spots, of which the first and third are minute, and the fifth and sixth about equal in size and largest; an ochreous tinge over basal region most pronounced on inner margin. *Hind-wing:*

entire disk ochre-yellow; a brown suffusion over basal and inner-marginal region and narrowly along costa; a moderately broad hind-marginal border of dark-brown, traversed by two parallel lunulated pale-brown streaks, of which the outer is well-marked; beyond middle a row of five black ocelli with minute bluish-white centres; of these, the first (close to costa) and the second (between second subcostal and radial nervules) are widely separated from each other and from the other three (which lie between the third median nervule and anal angle), and the fourth is the smallest and usually bipupillate. UNDER SIDE.—*Hind-wing and base and apex of fore-wing pale-brown, varied with dull cream-colour, and streaked with dark-brown. Fore-wing:* four bluish-white, irregularly-shaped spots in discoidal cell near its extremity, and a fifth (minute) just beyond cell; the second and third white spots of outer transverse row (close to apex) ringed with yellow, and the third also with an inner black ring so as to constitute a perfect ocellus; the apical pale-brown extends along great part of hind-margin and is traversed by two parallel slightly-sinuated dark-brown submarginal streaks. *Hind-wing:* basal region crossed by three extremely irregular dark-brown striæ, of which the outermost is greatly interrupted but joins the innermost by a longitudinal streak running between submedian and internal nervures; an independent short stria marking extremity of discoidal cell; ocelli more elaborate than on upper side, all in yellow rings outwardly brown-edged and containing a more or less incomplete internal blue iris; occasionally a sixth small ocellus situated between the first and second, but usually only a very faint circular spot there; the three lower ocelli surrounded by dark-brown clouding; the two submarginal brown striæ conspicuous on the pale ground.

♀ Like the ♂, but duller and paler in colour; *the white oblique costal bar of fore-wing considerably broader.* On under side of fore-wing the two inner bluish spots in discoidal cell are enlarged and sometimes confluent, forming a short rather wide bar indented outwardly.

Intimately allied to *D. dendrophilus*, Trimen, but at once known by *the very conspicuous white spots of the fore-wings,* particularly those of the inner row, which in *D. dendrophilus* are always small and ochreous and externally ill-defined or suffused, and in some specimens almost indistinguishable from the general ochreous clouding. The continuous costal bar formed by the conjunction of the upper four spots of this row is the most striking feature of this character; it is quite constant in the male, and more developed in the females that I have seen. The larger size and darker ground-colour as well as the much brighter ochre-yellow of the hind-wings are also very noticeable in *Indosa*, the female being in proportion to the male very much larger than is the case in *Dendrophilus;* while the under side of the hind-wings is paler and more variegated. The ocelli are larger and more conspicuous than in *Dendrophilus*, and are much more constant in number (five) and position;

the species just named possessing from five to seven, but more commonly six or seven on the upper side, and invariably seven on the under side.[1]

As noted by me in the *Transactions of the Entomological Society* for 1868, I discovered this striking form on the eastern border of Natal in 1867. Early in March I found it abundantly in the high lying woods at Tunjumbili, overlooking the Tugela River. The pure white spots of the fore-wings are very conspicuous in flight, and give the butterfly a very different aspect from that of its very close ally, *Dendrophilus*. The habits of *Indosa* are quite like those of *Dendrophilus*, and I noticed little companies of from six to ten settled head downwards on the trunks or low branches of trees, especially towards sunset. No ♀s occurred among the individuals I took; but in 1879 a Transvaal specimen of that sex was received from Mr. T. Ayres and others quite recently (April and May 1884) from near Pinetown, Natal, where they were captured by Colonel Bowker. The last-named gentleman informs me that he secured several fine examples, including one ♀, by sugaring the stump of a tree in a spot where he had noticed the species; and also that he has observed specimens frequenting human excreta and fallen fruit. Colonel Bowker forwarded to me a dried specimen of the plant on which he believes *Indosa* to feed. It is one of the *Acanthaceæ*, and has been kindly determined by Mr. P. MacOwan as *Hypoestes aristata*.

Localities of *Lethe Indosa*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—Pinetown (*J. H. Bowker*). Intzutze River.
    b. Upper Districts.—Tunjumbili (Fort Buckingham). Karkloof (*J. H. Bowker*).
  K. Transvaal.—Lydenburg District (*T. Ayres*).

GENUS MENERIS.

Meneris, Westwood, Gen. Diurn. Lep., ii. p. 296 (1850).

IMAGO.—*Head* of moderate size, densely hairy; *eyes* large, clothed with short hair; *palpi* of moderate length, ascendant, compressed laterally, clothed above and on the sides with a short velvety pile, densely hairy beneath, slightly convergent,—the terminal joint very small and distinct, short, slender, smooth; *antennæ* long and rather thick, with the club elongate, gradually formed, cylindrical, outwardly curved and pointed at the tip.

Thorax rather robust, elongate-ovate, densely hairy on the back, especially laterally and posteriorly, where the hair is much longer. *Fore-wings* large, somewhat truncate; costa moderately arched, the convexity growing very gradually from base; apex rounded; hind-margin almost straight, moderately sinuated; inner margin almost straight; a coating of very short hairs near base, more developed on inner margin; discoidal cell rather short, truncate, the disco-cellular nervules (of which the upper is very short, the middle of moderate length, and the lower much longer and slightly bent outwardly) being only a little oblique; first and second subcostal nervules arising near each other, a little before end of cell, and the third a considerable distance beyond cell, not far from the origin of the fourth. *Hind-wings* large; costa slightly arched about middle; hind-margin scalloped; anal angle pronounced; inner margins meeting to a little beyond tip of abdomen, forming a deep groove,—beyond that slightly hollowed; discoidal cell very short, its termination pointed inferiorly, the lower disco-cellular nervule forming a very acute angle with the median nervure just beyond origin of second median nervule; costal nervure extending to apex; internal nervure strong, curved, ending on inner margin rather beyond middle; inner margin ciliated throughout; over basal half a dense coating of long hairs, more developed towards inner margin. *Fore-legs* of ♂ very short, slender; tarsal joint very short; tibia and tarsus clothed with very short velvety pile, and fringed externally and at the tip with dense long hair; those of ♀ rather thicker and longer (especially tarsal joint), and not so hairy. *Middle* and *hind legs* of moderate length, rather thick; femora smooth, slightly downy; tibiæ strongly spinose generally, the terminal spurs rather long and acuminate; tarsi with the joints very distinct, finely spinulose above, more coarsely so beneath. *Abdomen* rather short, laterally compressed.

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[1] Colonel Bowker, early in February 1886, found an interesting small variety of *Indosa* at Karkloof, some twenty-two miles north-west of Maritzburg, at an elevation of about 5000 feet. The two ♂s sent to me measure respectively only 2 in. 6 lin. and 2 in. 7 lin. across the wings, while the ♀ barely expands 3 in. Both sexes, moreover, show a slight approach to *L. dendrophilus* in a slight ochre-yellowish suffusion of the lower spots of the discal row in the fore-wings. Colonel Bowker mentioned that this variety was numerous about rotten fruit in the garden of a farmer, and that the more active ♂s flew round in a certain line, and all ended by flying into the base of an old quince hedge, where he suspected there must have been the pupa of a ♀.

Larva.—Rather thick, but attenuated towards each extremity; anal segment bearing two small pointed projections; skin thinly clothed with short hairs.—(Characters derived from a drawing by Mrs. F. W. Barber.)

Pupa.—Very smooth and robust, with all the prominent parts much blunted and rounded; region of wing-covers extremely convex; a deep constriction on back between thorax and abdomen; anal suspensory stalk slender and elongated.—(Characters of a specimen received from Mrs. F. W. Barber.)

This genus is one of the few which are peculiar to South Africa, the large and beautiful butterfly which alone represents it not being known to occur in any tropical locality. As mentioned in my remarks on the Sub-Family, I had considerable hesitation in placing *Meneris* among the *Satyrinæ*, on account of its long and thick antennæ and robust general structure,—to which may be added the comparatively similar size and development of the first pair of legs in the two sexes; but these approximations to the *Nymphalinæ* are together of less importance than those characters which, in the earlier states as well as in the imago, exhibit clear Satyrine affinities. In neuration *Meneris* agrees very closely with *Lethe*—especially with the South-African *L. dendrophilus* and *L. Indosa*—and alike in general colouring and pattern bears great resemblance to the latter.

The only species, *Meneris Tulbaghia*, was named by Linnæus in honour of a Dutch governor of the Cape (1731–51), who is said to have been the first to send to Europe a collection of the insects of the Colony. It is a very active, handsome butterfly, frequenting open elevated ground, especially steep mountain-sides and rocky hills. It is remarkably constant in colouring and pattern, only varying in being rather smaller and darker in some of the drier interior districts. The largest examples are found on the eastern side of the Cape Colony and in Natal.

33. (1.) **Meneris Tulbaghia,** (Linnæus).

♂ *Papilio Tulbaghia*, Linn., Mus. Lud. Ulr. Reg., p. 284, n. 102 (1764); and Syst. Nat., i. 2, p. 775, n. 158 (1767).
♂ „ „ Cram., Pap. Exot., i. t. iii. ff. E, F (1775).
♂ (as ♀) *Oreas marmorea Tulbaghia*, Hübn., Samml. Exot. Schmett., i. t. 93 (1806).
♂ *Nymphalis Tulbaghia*, Godt., Enc. Meth., ix. p. 400, n. 171 (1819).
Meneris Tulbaghia, Doubl., List. Lep. Brit. Mus., i. p. 106 (1844).
♂ *Meneris Tulbaghia*, Westw., Gen. D. Lep., ii. pl. 46, f. 3 (1850).
♂ ♀ *Meneris Tulbaghia*, Trim., Rhop. Afr. Aust., i. p. 162, n. 96 (1862); and ii. p. 339 (1866); and Trans. Ent. Soc. Lond., 1870, p. 358.

Exp. al., 3 in. 3 lin.—4 in. 2 lin.

Rich dark-brown, with deep yellow-ochreous transverse stripes and spots; hind-wing with blue ocellated spots.

♂ *Fore-wing:* suffused with chocolate-brown from base; beyond middle, a short, transverse, deep yellow-ochreous band, from costa to between second discoidal and third median nervules, divided unequally into four by three crossing nervules; a little before this band, commencing immediately beneath extremity of discoidal cell, a similar, longer, transverse band of the same colour, also crossed by three nervules, and extending to inner-margin beyond middle; beyond bands, near and parallel to hind-margin, a row of eight yellow-ochreous spots, the first three of which are contiguous and somewhat quadrate, the fourth sub-obvate and inclining out from the line towards hind-margin, the remaining four rounded, the last of them (between first median nervule and submedian nervure) being the smallest; along hind-margin, a moderately-wide border, slightly paler than ground-colour, and containing a thin, dark, median streak from apex nearly to anal angle. *Hind-wing:* ochreous band of *fore-wing* (that extends to inner margin) continued across this wing by a slightly-paler band from costa, narrowing to a little before anal angle, but not quite reaching inner margin; space *before* band almost wholly chocolate-brown, with a coating of hairs of that colour, which are longest on submedian nervure; beyond band, a transverse row of five ocellated spots, of different sizes, black, in thin, yellow-ochreous rings, with glistening violet-blue centres pupilled with white, extending from second subcostal nervule to anal angle; of these ocelli, the second is sometimes wanting, and always small when present,—the fifth, at anal angle, being always *bipupillate*, with scarcely a tinge of the blue central colouring, but in a *complete* yellow-ochreous ring. *Cilia* of both wings *pale creamy-yellow;* brown-chequered in *fore-wing*, only partly so in *hind-wing*. UNDER SIDE.—*Paler and duller* in colouring, but the surface *more glossy and smooth;* yellow-ochreous markings much paler, especially in *hind-wing*. *Fore-wing:* in and beyond middle of discoidal cell, a broad, transverse, short, pale-yellowish bar, rather widely black-margined both internally and externally; basal portion, and hind-margin from apex, *paler* than rest of ground-colour, the latter including two thin, parallel, dark streaks from apex, becoming obsolete a little above anal angle. *Hind-wing:* of the same hue as base and apex of *fore-wing;* two irregularly zigzag, black, transverse striæ before middle, from costa to submedian nervure or a little below it; on costa, *between* the two striæ, a more or less distinct, very pale, yellowish spot, occasionally obsolete or nearly so; discoidal cell closed by a short, black streak; pale transverse band edged *internally* with a sharply-defined, black streak; ocellated spots very different from those on *upper side*, more equal in size (the second spot *wanting*, but a large additional ocellated spot between first and second subcostal nervules), their violet, white-pupilled centre very small, surrounded by dull-golden, black, and pale-yellow rings in a more or less defined, black outer circle; of these ocelli, the first three are similar, the fourth has a large black centre edged with violet on its *inner* rim, the fifth has a black, bipupillate centre *without violet*, and its rings are half-obliterated *outwardly;* immediately beyond the *fourth ocellus* is an oblong space of glistening-violet scales; from apex, two parallel blackish streaks extend along hind-margin, the *inner* one ending in the patch of violet scales just described, the *outer* one reaching anal angle. *Cilia* of wings paler than on *upper side*.

♀ *Slightly duller and paler in colouring, with broader markings;* the *blue* in ocelli of hind-wing *purer* than in ♂, with scarcely any violet reflection. *Fore-wing:* in discoidal cell, near its extremity, a yellow-ochreous bar, similar in size and shape to that on *under side of* ♂ (this marking is sometimes half obliterated). *Hind-wing:* second ocellus always *wanting*, but in some specimens the traces of an additional ocellus between first and second subcostal nervules are visible. UNDER SIDE.—Like that of ♂, but the markings generally *broader and paler*.

The early stages of *Tulbaghia* were discovered at Highlands, near Grahamstown, by Mrs. F. W. Barber, who in 1864 sent me drawings of them, and a dead specimen of the pupa, from which the following descriptions were made.

Larva.—Pale bluish-green; a conspicuous black, dorsal stripe from head to tail. Head chestnut-red; legs ochreous; spiracular rings black. "Found on *Hebenstreitia* and on several species of *Compositæ*, in high sheltered situations among rocks, September and October. The young larva is of a much yellower green than in its full-grown state."—*M. E. Barber.*

In 1863 twenty larvæ were hatched from eggs laid by a specimen captured near Cape Town. When just emerged, they were about ¼ inch in length, rather closely set with bristly hairs, and with the head large. Their colour was sandy-yellowish. They would not eat various plants which I offered them, and I therefore liberated the survivors.

Pupa.—"Semi-transparent, *French-white* in colour" (M. E. B.) Abdomen with a dorsal row, and on each side three rows, of small black spots; rest of surface irrorated with black dots for the greater part; some larger black spots at dorsal and lateral angles, and about head, and a row of them across outer portion of wing-covers. Anal prominence at point of suspension black. "Suspended to ferns or other plants growing under shelving rocks. Imago emerged from pupa after two months" (M. E. B.)

On 24th December 1876 Mr. C. A. Fairbridge took two examples (♂ and ♀) in his garden at Sea Point, near Cape Town, of which the ♂ individual had only just emerged from the chrysalis. The pupa-skin, which he forwarded with the butterfly, was attached to a slight silken web among dry stalks and leaves on a trellis immediately above a bank thickly covered with the "Kweek" grass (*Stenotaphrum glabrum*); and Mr. Fairbridge conjectures that this grass was probably the food-plant of the larva. Mrs. Barber informed me that she doubted if the larva fed on the plants on which she found it, as she had not seen it eating any of them.

This very fine insect is peculiar to South Africa, but seems generally distributed wherever mountains or high rocky hills exist. It keeps very closely to elevated stations, as a rule, but will sometimes haunt lower ground, especially when strong winds prevail. Its flight is tolerably swift, and sometimes long-sustained, but usually it settles frequently, either on rocks, under overhanging banks, or on flowers. It exhibits a decided liking for red flowers;—I have noticed it on *Nerine*, *Hæmanthus*, *Antholyza*, and *Disa cornuta*, and have taken two examples with the pollinia of the last-named plant attached to the head. Mrs. Barber found that at Highlands the butterfly was fond of the aloe flowers. When settled on flowers, it is easily approached and captured, but is very wary when resting on the ground or on rocks. Specimens which I have noticed in Cape Town flew along under the eaves of houses, and occasionally entered open windows; and two were thus captured in the Exhibition room of the South-African Museum. It is most prevalent during February, March, and April; but I have known it to occur as early as the 24th December and as late as the 18th May.

The northern limit of *Tulbaghia's* range is not known, but its most northerly locality yet recorded is the district of Lydenburg, in the Transvaal, whence Mr. T. Ayres sent a specimen in 1879. This example, and those I have received from Burghersdorp, in the north-east corner of the Cape Colony, and from Basutoland, are rather smaller and darker than usual.

Localities of *Meneris Tulbaghia.*

- I. South Africa.
  - B. Cape Colony.
    - *a.* Western Districts.—Cape Town. Kalk Bay. Bain's Kloof. Genadendal (*G. Hettarsch*). Swellendam Mountains (*Burchell*). Knysna.
    - *b.* Eastern Districts.—"Port Elizabeth (*S. D. Bairstow*)." Grahamstown: Highlands and Brookhuyzen's Poort. Queenstown District: Windvogelberg (*Dr. Batho*). Burghersdorp (*D. R. Kannemeyer*).
    - *d.* Basutoland.—Maseru (*J. H. Bowker*).
  - D. Kaffraria Proper.—Tsomo River (*J. H. Bowker*).
  - E. Natal.
    - *b.* Upper Districts.—Hermansburg. Tunjumbili. Greytown.
  - K. Transvaal.—Lydenburg District (*T. Ayres*).

SUB-FAMILY 3.—ACRÆINÆ.

Heliconides (part), Boisd., Sp. Gen. Lep., i. p. 165 (1836).
Acræidæ, Doubl., Gen. Diurn. Lep., i. p. 137 (1848).
Acræinæ, Bates, Journ. Ent., 1861, p. 220; 1864, p. 176.

IMAGO.—*Head* of moderate size (rather broad in genus *Acræa*), clothed with close down; *eyes* smooth, rather prominent; *palpi* rather long, divergent, ascendant, rather scantily clothed with hair (which is longer beneath),—the second joint long, usually more or less thickened or swollen,—the terminal joint very small or even minute; *antennæ* rather long and thick, with a rather abruptly formed flattened club.

Thorax compressed laterally, narrow, short, downy; prothorax very distinctly defined, more or less hairy. *Fore-wings* elongate, sometimes markedly produced in apical portion; costa almost straight, only slightly curved at base and near apex, which is rounded; hind-margin entire, rather convex, except when apical portion is produced, making lower part hollowed; posterior angle much rounded; inner-margin nearly straight; discoidal cell of moderate length or rather short, narrow, closed obliquely by the more or less strongly outward-bent lower disco-cellular nervule, which (except in *Actinote*) is much longer than the middle one; first subcostal nervule originating a little before or at extremity of cell, second at a considerable distance beyond it. *Hind-wings* rather elongate, much rounded outwardly, sometimes inclining to prominence about middle of hind-margin, which is entire; costa very prominent at base, but thence remarkably straight; anal angle not at all marked, much rounded off; inner-margins convex at base, sometimes almost meeting across basal part of abdomen; costal nervure extending to apex; discoidal cell narrow, usually short (in *Planema* very short); internal nervure well-developed, ending considerably beyond middle. *Fore-legs* of ♂ much reduced, slender, scaly, in some cases very finely hairy; femur and tibia about equal in length; tarsus less than half as long as tibia, cylindrical, without articulation; those of ♀ larger, smoother, with the femur proportionately longer, and tarsus indistinctly four- or five-jointed, and finely spinulose beneath. *Middle* and *hind legs* rather stout and short; femora and tibiæ about equal in length, the former smooth, the latter finely spinose and with rather short terminal spurs; tarsi very spinose, especially on the sides and beneath,—the terminal claws long, curved, without paronychia or pulvilli, but with an inferior basal lobe or expansion.

Abdomen elongate, laterally compressed, thickened more or less at extremity, usually much arched, sometimes extending as far as or beyond anal angle of hind-wings; penultimate segment in ♀ often bearing on its under side a hollowed corneous appendage.

LARVA.—Cylindrical, of almost even thickness throughout, set with rigid bristled spines; head smooth, without spines.

PUPA.—Slender, elongated; sides of thorax angulated, its back bluntly prominent; head more or less rounded, sometimes bluntly bifid; back of abdomen usually smooth (but in *Planema* bearing several pairs of tubercles or of long filaments).[1]

The *Acræinæ* are well characterised by their long abdomen and fore-wings, abruptly clavate antennæ, thick divergent palpi, unchannelled inner-margin of hind-wings, and want of any appendages to the tarsal claws. Their wings are never thickly covered with scales, but exhibit every gradation from semiopacity to transparency. The abdominal horny pouch or plate borne by the female seems to be most developed in *A. Horta* (L.), *A. Neobule*, Doubl., and *A. Anemosa*, Hewits.; and it is certainly remarkable that no similar structure is to be found among butterflies except in *Parnassius*, a genus of *Papilioninæ*, which at the same time presents two other characteristic features of the *Acræinæ*, viz., semi-transparent wings and simple tarsal claws lobed at the base.[2] While in several ways resembling the *Heliconinæ*, especially in the lengthened abdomen and wings, and in the closed cell of the hind-wings, the *Acræinæ* seem on the whole to be most closely related to the group of *Nymphalinæ* represented by the genera *Argynnis*, *Melitæa*, and *Phyciodes*, possessing in common with the latter abruptly-clavate short antennæ, swollen and divergent palpi, short stout legs, scaly and finely spinose, and elongated fore-wings and abdomen. The larvæ of the two groups also exhibit great similarity, and the pupæ are much alike, except that *Acræa* is more elongate.

The *Acræinæ* present considerable diversity of pattern and colouring, but none of them can vie in beauty with the most brilliant species of *Nymphalinæ* or *Heliconinæ.* The ground-colour in many is ochre-yellow or deep brick-red thickly spotted with black, the females being duller and often distinguished by an oblique whitish bar in the fore-wings. The red in *Acræa Acara*, Hewits., and *A. Petræa*, Boisd., is, however, very vivid, and with a gloss of carmine in the living ♂ s; but it fades—like all the red tints in this Sub-Family—to quite a dull hue in the course of a few months after death. In the genus *Planema* the ground-colour is dull-brown or blackish, with broad fulvous, ochre-yellow, or white patches and bars, and with no black spots except a small group at the base of the hind-wings on the under side. The American genus *Actinote* has a similar style of colouring, but the bars and patches are of brighter tints, and the dark ground is in *A. Ozomene* and *A. Stratonice* (Godt.), and allies, richly glossed with blue. The heads and bodies of the *Acræinæ* are (except in some of the South-American species) conspicuously spotted with white and ochre-yellow, and in some species of *Acræa* the terminal half of the abdomen of the male is suffused with an ochre-yellow or creamy whitish tint.

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[1] Stoll (*Suppl. Cramer, Pap. Exot.* pl. 1), and more recently Fritz Müller (*Kosmos*, Dec. 1877, *apud* R. Meldola), have described and figured the pupa of the Brazilian *Actinote Thalia;* it is white streaked with black, and bears five pairs of black spines on the abdominal segments—not nearly so long as the filaments in *Planema*.

[2] See Doubleday, *Gen. Diurn. Lep.*, i. p. 139.

I here adopt, as generically distinct, Doubleday's "Section II." of the genus *Acræa*, named *Planema*, but not his Sections III. and IV., *Gnesia* and *Telchinia*, which seem to me insufficiently distinguished both from each other and from the typical Section I. (*Hyalites*, Doubl.) I have found it necessary to remove *Alæna* from the Sub-Family, as there can be no doubt that the resemblance to *Acræa* presented by the two curious little butterflies constituting the genus—viz., *A. amazoula*, Boisd., and *A. Nyassæ*, Hewits.—is superficial only, and that they are really an aberrant form of *Lycænidæ*, allied to *Liptena*, &c. For *Acræa punctatissima*, Boisd., I am obliged to create a new genus (*Pardopsis*), as it presents characters of considerable divergence.

The *Acræinæ* are butterflies of very slow flight, and usually congregate in some numbers in their favourite haunts.[1] Most of the genus *Acræa*, especially those of the *Horta* group, prefer open localities, where they bask with expanded wings on low flowers (strongly reminding one of the European *Melitææ*); but others, such as *A. Natalica*, *A. Buxtoni*, and *A. Cabira*, frequent the outskirts of woods, and the species of *Planema* and *Pardopsis* are thoroughly sylvan. The deliberate movements of these butterflies and their complete disregard of concealment, in conjunction with their very conspicuous appearance, indicate very clearly that little if any active persecution of them is carried on. As noticed above in the generalities under "*Rhopalocera,*" they, in common with the *Danainæ*, owe this immunity to their malodorous and uneatable nature, which leads insectivorous animals to pass them by.[1] Like the *Danainæ* also, many of them are the objects of "mimicry" by butterflies belonging to other groups—*Nymphalinæ*, *Papilioninæ*, and even a few *Lycæninæ*—which do not possess the advantage of unpalatableness. Two South-African cases are noted in the table given above, and ten or twelve others have been recorded from Western Tropical Africa; while one in Tropical South America—that of *Actinote Thalia*—has been tabulated by Mr. H. W. Bates (*Trans. Linn. Soc. Lond.*, xxiii. p. 503).

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[1] Though so gregariously inclined, the *Acræinæ* would appear to be rather quarrelsome and combative. Mrs. Barber wrote to me that she had noticed ♀ s of *A. Horta* struggling with each other for the possession of a particular leaf of the food-plant, "although on the same tree there were ten thousand equally good," and after a prolonged rough-and-tumble fight, end by laying their eggs on each other and flying away with them !

Captain Harford, too, sent me two males of *A. Encedon*, which he captured while engaged in a most pertinacious conflict on the ground.

The spiny larvæ of the *Acræinæ* are very gregarious, feeding in companies and fully exposed. They emit a rather offensive odour, of the same character, but not so strong, as that of the perfect insects. The various species known consume plants of several different orders, and some (*A. Horta*, *A. Acara*) are very destructive to passion-flowers in gardens.

The sub-angulated elongate pupæ are remarkably handsome, and usually very conspicuous from their white or yellowish ground-colour, veined and streaked with black, and marked abdominally with orange and black spots, orange tubercles, or pink filaments. Unlike the immense majority of chrysalides, in which concealment is secured by form and colouring, they seem to court observation; and their showy appearance, like that of the perfect insects, doubtless serves to indicate to the hungry insectivore a distasteful morsel.

Though ranging throughout the tropical regions, the *Acræinæ* find their main development in Africa and its islands, some ninety species, or about two-thirds of the number known, being Ethiopian. From South America thirty-eight are recorded; while the Indian region produces but three, and the Australian only two species. Some highly-interesting and peculiar forms of *Acræa* inhabit Madagascar. *Planema* seems specially characteristic of West Africa, only two representatives occurring south of the Tropic; while of *Acræa* twenty South-African species are on record.

GENUS ACRÆA.

Acræa, Fab., "Illiger's Mag., vi. p. 284 (1807);" Latreille, Enc. Meth., ix. p. 10 (1819); Doubl. (Sections *Hyalites*, *Gnesia*, *Telchinia*, *Pareba*), Gen. Diurn. Lep., i. p. 137–142 (1848).

IMAGO.—*Head* rather broad; *palpi* with the second joint long and swollen, thinly clothed with hairs (which are much longer and bristly beneath), and with the terminal joint minute.

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[1] The peculiar odour of these butterflies seems to reside chiefly in a bright-yellow liquid secretion, which, on pressure of the thorax, exudes somewhat copiously.

The *Acræinæ* are extremely tenacious of life, and their structure is so elastic that no pressure of the thorax, short of absolute crushing of the tissues, suffices to kill, or even paralyse them.

Fore-wings with discoidal cell short; first discoidal nervule given off before extremity of cell. *Hind-wings* with discoidal cell short, closed very obliquely by lower disco-cellular nervule, which joins third median nervule at some little distance from its origin.

Abdomen usually shorter than hind-wings, sometimes as long or a little longer; inferior corneous appendage in ♀ of variable size, developed largely in the *Horta* group.

The other characters of the imago, and those of the larva and pupa, are sufficiently described under the Sub-Family.

Acræa is the largest and by far the most widely-ranging genus of the group, the few scattered Indian and Australian forms belonging to it, and the outlying southern province of its African metropolis yielding twenty known species.

In pattern and coloration the numerous species of *Acræa* group themselves into a good many sections, and the South-African forms may be arranged in that way as follows, viz.:—

1. Wings wholly transparent—*A. Rabbaiæ* (Ward).
2. Wings partly transparent—*A. Horta* (Linn.), *A. Neobule,* Doubl., *A. Cerasa,* Hewits.
3. Wings red (in ♀ duller), with numerous black spots and black margins—*A. Violarum,* Boisd., *A. Nohara,* Boisd., *A. Petræa,* Boisd., *A. Doubledayi,* Guér., *A. Caldarena,* Hewits., *A. Aglaonice,* Westw.
4. Pattern like that of No. 3, but black margins more developed, and some wide black suffusion about bases—*A. Stenobea,* Wallengr., *A. Natalica,* Boisd., *A. Anemosa,* Hewits., *A. Acara,* Hewits., *A. Barberi,* Trim.
5. Wings yellowish or dull-rufous, thinly black-spotted; apex of fore-wing dusky, crossed in both sexes by a white bar—*A. Encedon* (Linn.)
6. Wings ochre-yellow with many black spots.—*A. Rahira,* Boisd., *A. Anacreon,* Trim.
7. Wings rufous-yellow, with yellow-spotted black borders.—*A. Buxtoni,* Butl.
8. Wings dark-brown with pale-yellow bands.—*A. Cabira,* Hopff.

Only five species—*A. Cerasa, Violarum, Barberi, Anacreon,* and *Buxtoni*—seem to be peculiar to South Africa, and of these, *Barberi* probably occurs within the Tropic line. Nine others, however, have not hitherto been recorded from north of the Equator.

The commonest and most generally distributed South African species, and the only one which extends to the Cape peninsula, is *A. Horta;* and next to it comes *A. Rahira,* which does not, however, range farther to the south-west than the Caledon district. In addition to these, the eastern districts of the Cape Colony yield *A. Neobule, Stenobea, Natalica,* and *Encedon;* but, with the exception of the last-named species, they seem to be rather scarce. Two or three others have been brought from Kaffraria Proper, but it is not until Natal is reached that the genus is richly represented; nine more species, mostly very numerous in individuals, inhabiting that region. Zululand and Delagoa Bay are equally rich, the latter being, moreover, the only known South-African locality for the remarkable *A. Rabbaiæ;* and the Eastern Transvaal contains a good many species. *A. Caldarena, Aglaonice, Anemosa,* and probably *Barberi,* are characteristic of the Tropical interior country, and only just enter South Africa proper.

34. (1.) Acræa Rabbaiæ, Ward.

Acræa Rabbaiæ, Ward, Ent. M. Mag., x. p. 152 (1873).
„ „ Oberthür, Etudes d'Ent., iii. p. 25, pl. ii. f. 1 (1878).

Exp. al., 2 in. 1–9 lin.

Transparent, almost colourless, with a few fuscous markings; neuration strongly defined, dark brown. *Fore-wing:* base narrowly suffused with fuscous; near base, between median and submedian nervures, a more or less conspicuous fuscous spot, variable in size and shape; rather before than beyond middle, a very irregular transverse submacular fuscous stripe, from costal to submedian nervure; the upper part of this marking is broadest and occupies the outer extremity of discoidal cell,—it is immediately preceded by a small (usually contiguous) costal spot above the cell; apical and hind-marginal border very faintly tinged with brownish, crossed by some just perceptible very pale-yellowish inter-nervular rays. *Hind-wing:* not so transparent as fore-wing, thinly covered with white scales, unspotted; base narrowly suffused with fuscous; a broad more or less even hind-marginal fuscous border, containing six or seven semi-transparent sagittate spots faintly tinged with ochreous-yellow; of these spots, the first (next apex) is much the smallest and sometimes almost obsolete, —and the first and seventh (and occasionally also the second) are sometimes joined to the ground-colour of the wing. UNDER SIDE—Glossy, almost scale-less; markings the same as on upper side, but fainter (except the fuscous markings of fore-wing, which are quite as dark).

Palpi and thoracic spots pale creamy-yellow; abdominal spots (more or less confluent posteriorly) creamy-whitish.

M. Oberthür (*op. cit.*, p. 25) notes that the hind-wings are white or yellow, and that the transverse band of the fore-wings is variable in development. The colouring of his figure is more ochreous than that of any of the Delagoa Bay specimens which I have seen; and the transverse band of the fore-wings considerably narrower and more macular.

This beautiful *Acræa* is very distinct from all the known South-African species; its almost total want of colour and extreme transparency, together with the conspicuous central black bar across the fore-wings, rendering it very easily recognised. Its nearest ally is probably *A. Satis*, Ward, also a native of East Africa; but this species differs markedly in possessing two conspicuous white spaces in the fore-wing and an irregular transverse double row of black spots in the hind-wing. In the Hewitson Collection in the British Museum there is another allied species (unnamed) labelled "Zanzibar;" but in this butterfly the wings are only semi-transparent and warm reddish-ochreous, and the fore-wing has a conspicuous large black spot in the discoidal cell and a dusky hind-marginal border enclosing six or seven large spots of the ground-colour.

The late Mr. Monteiro informed me that he met with *A. Rabbaiæ* not uncommonly at Delagoa Bay, but that it was not easily captured owing to its high flight.

Localities of *Acræa Rabbaiæ*.

- I. South Africa.
  - H. Delagoa Bay.—Lourenço Marques (*J. J. Monteiro*, 1878).
- II. Other African Regions.
  - A. South Tropical.
    - *b.* Eastern Coast.—"Bagamoyo (*Raffray*)."—Oberthür. "Ribé."—Ward.

35. (2.) **Acræa Horta**, (Linn.)

Papilio H. Horta, Linn., Mus. Lud. Ulr. Reg., p. 234, n. 53 (1764), and Syst. Nat., ed. xii. p. 755, n. 54 (1767).
♂ *Papilio Horta*, Drury, Ill. Nat. Hist., iii. pl. 28, ff. 1, 2 (1782).
,, ,, Cramer, Pap. Exot., pl. 298, ff. F, G (♂) (1782).
,, ,, Wulfen, Cap. Ins., p. 31, n. 29 (1786).
,, ,, Fab., Ent. Syst., iii. 1, p. 159, n. 491 (1793).
Acræa Horta, Godt., Enc. Meth., ix. p. 231, n. 1 (1819).
♂ ♀ *Acræa Horta*, Trim., Rhop. Afr. Aust., i. p. 92, n. 57 (1862).

Exp. al., 2 in.—2 in. 8 lin.

♂ *Semi-transparent; brick-red with black spots; the apical portion of fore-wing transparent ashy-grey. Fore-wing:* base narrowly suffused with black; red ground-colour abruptly and irregularly bounded by the apical grey in an oblique line from costa beyond middle to end of first median nervule; an oblique irregular black streak closing discoidal cell; in some specimens a small more or less distinct spot in cell near its extremity; occasionally a small blackish spot beneath cell, between first and second median nervules; more rarely another small spot nearer base, a little below median nervure; along hind-margin a row of six more or less defined inter-nervular red spots, of which the first and second, next apex, are larger and more elongate than the rest. *Hind-wing:* all brick-red; a conspicuous basal black patch, formed of three or four confluent large spots; a separate spot close to costa near base; two spots marking extremity of discoidal cell, and another near them in the cell; a discal row of eight spots from costa to inner margin, highly irregular, the outermost spot being that immediately above third median nervule, and the spots between it and inner margin larger and less rounded than the others; a hind-marginal black border of moderate width, containing seven rounded inter-nervular spots of a tint varying from pale-yellowish to the red ground-colour (some of these spots, and often most of them, join the ground-colour, the black festooned line inwardly bounding them being very thin and in places obliterated). UNDER SIDE.—*Fore-wing:* similar, but much paler in tints. *Hind-wing: pale creamy-yellowish;* the black spots very conspicuous, those near base more separate than on upper side, being less suffused; a brick-red patch at base close to costa, and a margin of the same colour running round wing from just before apex to anal angle, and thence to base; hind-marginal border more perfect than on upper side, the yellowish spots in it round and conspicuous.

♀ *Faint ochrey-reddish,* sometimes *dingy pale-ochreous. Fore-wing:* pattern and markings similar, but in the paler specimens *almost bereft of colour,* and very transparent. *Hind-wing:* black spots similarly arranged; in the redder specimens often a blackish suffusion beyond the extremity of discoidal cell, but not reaching hind-marginal band; in the latter the spots are usually conspicuous from their pale-yellowish tint. UNDER SIDE.—Quite similar to that of ♂, but *paler.*

Palpi yellow, thickly set with black hairs. Collar with a yellowish spot; pectus with five white spots, on each side. Thorax and back of abdomen black; the latter fuscous beneath, and with a lateral row of reddish spots, gradually increasing towards tip. These spots more developed in the ♂, which has also a subdorsal row of four or five very small similar spots on each side of terminal half of abdomen scarcely visible in the ♀.

Aberration.—♂ In *hind-wing* all the basal and discal spots are enlarged and confluent, so that *nearly the whole surface is black.*

Hab.—Pembroke Farm, near King William's Town (Miss Agnes Bowker, 1873). In the collection of the South-African Museum.

The size and even number of the spots in this species vary very much as regards the hind-wing, some examples having them very large and well developed throughout, and others presenting very few and minute spots. The specimens having (like the ♂ figured by Cramer, *loc. cit.*) three spots in the *fore-wing* are not common.

LARVA.—About 1¼ in. long; with strong branched spines. *Dull brownish-ochreous, closely striped with black transverse streaks:* the incisions of segments and a line down the back pale-ochreous; a broad ochreous band, *not* crossed by the black streaks, on each side, above the legs, which are of a bright shining yellow; head shining-black. On the second segment are two, and on the last four black branched spines; on each of all the other segments, six similar spines. Feeds on *Kiggelaria Africana* (a tree not uncommon about Cape Town) and in gardens on *Passiflora cœrulea, Tacsonia magnifica,* and other passion-flowers.

PUPA.—About ¾ in. long, rather slender; head blunt, hardly bifid; lateral angles at bases of wing-covers prominent and acute; back of thorax not ridged, rather blunt and rounded; abdomen considerably elongate, curved inwardly towards its extremity. *Pale-creamy, with a tinge of ochreous:* wing-covers streaked with black *along the positions of the nervures;* two curved black streaks from eyes to angles at bases of wings; two black, short, longitudinal streaks on back of thorax; a transverse black streak at junction of thorax and abdomen; on each side of the back, a row of large, united, black, ochre-yellow-centred spots; each row united by thin, black lines to a row of similar spots below it, on side of abdomen; a shorter row of similar, more contiguous spots along middle of under side of abdomen.

Attached to stems and leaves of plants, palings, walls, &c. The silk to which the tail is attached often covers an area of an inch in diameter. The butterfly emerged, in most instances, eight or nine days after the disclosure of the pupa.

A common and abundant species throughout South Africa. In fields and gardens in and about Cape Town these butterflies are particularly plentiful; they can be taken all the year round, but are less numerous in May and June than at other times. Throughout the summer they are quite a feature of the locality, their deep-red colour and slow flight rendering them very conspicuous objects; while their spiny larvæ and remarkably handsome pendant pupæ are everywhere noticeable on gates, trunks of trees, and walls. The larvæ often occasion much damage to passion-flowers in gardens, as I have seen both in Cape Town and Grahamstown. In the latter locality, Mrs. Atherstone was much concerned to find that the fowls would not eat these destructive caterpillars when collected for them by the gardener; but this was not to be wondered at, as the larvæ, in addition to their prickly skins, have a strong and disagreeable odour, more perceptible than in the pupa, or even in the butterfly. The pupa, however, is probably a distasteful morsel, as it is peculiarly conspicuous wherever attached.

It is rather surprising that so prevalent and widely-ranging an *Acræa* as this should, as far as is known, be attended by no mimicker.[1]

I have frequently captured the paired sexes of *A. Horta*. In one instance, which I carefully noted at the time, the ♀ rested on the ground with expanded wings, and the ♂ rested on the ♀ with his wings also flatly extended. In this position (which was maintained) the heads of the two were held in the same direction, and the extremity of the ♂ abdomen was twisted sideways, as in the union of the saltatorial Orthoptera.

Localities of *Acræa Horta*.

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Cape Town. Caledon (Genadendal: *G. Hettarsch*). Robertson. Swellendam (*L. Taats*). Oudtshoorn (— Adams). Knysna (*Miss Rex*).
    b. Eastern Districts.—Uitenhage (*S. D. Bairstow*). Grahamstown. King William's Town (*W. S. M. D'Urban*). Queenstown, Windvogelberg (*Dr. Batho*).
    d. Basutoland (*J. H. Bowker*).

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[1] Mr. A. G. Butler has recently (August 1884) suggested that the variety of *Pseudacræa Trimenii*, Butl., which he has named *P. Colvillei*, is probably modified in imitation of *A. Horta*, to which it bears considerable resemblance.

D. Kaffraria Proper.—Butterworth and Bashee River (*J. H. Bowker*).
E. Natal.
  a. Coast Districts—D'Urban. Verulam. Mapumulo.
  b. Upper Districts.—Hermansburg. Pietermaritzburg (*Miss Colenso*). Karkloof (*W. Morant*).
K. Transvaal.—Lydenburg District: *T. Ayres.*

II. Other African Regions.
  A. South Tropical.
    a. West Coast.—"Angola (*Pogge*) and Chinchoxo (*Falkenstein*)."—Dewitz.
  B. North Tropical.
    a. West Coast.—Sierra Leone [Coll. Brit. Mus.]

36. (3.) **Acræa Neobule,** E. Doubleday.

Acræa Neobule, E. Doubl., Gen. Diurn. Lep., pl. xix. f. 3 (1848).
„ „ Guérin, in Lefbv. Voy. en Abyss., vi. p. 378 (1849).
„ „ Reiche, in Ferr. et Gal. Voy. en Abyss., iii. p. 466, pl. 33, ff. 3, 4 (1849).
„ „ Trimen, Trans. Ent. Soc. Lond., 1870, p. 345.
„ „ Gerst., Gliederth.-Fauna d. Sansibar.-Geb., p. 368, n. 14 (1873).
Acræa Seis, Feisth., Ann. Soc. Ent. de France, 2me Série, viii. p. 247, No. 1 (1850).

Exp. al., 2 in. 1–6 lin.

♂ Pale-red, inclining to ochreous, semi-transparent, with blackish spots; apical region of fore-wing transparent ashy-grey. *Fore-wing:* red, ill-defined exteriorly, but extending to beyond discoidal cell, and thence obliquely to posterior angle and hind-margin near it; a large spot in discoidal cell, immediately above origin of first median nervule; a large elongate curved spot on nervules closing cell; below, and in a transverse line with this latter spot, two rather large spots, one above, the other below, first median nervule; a little beyond end of cell, a subcostal, oblique row of three or four small spots (often indistinct or almost obsolete); below median nervure, not far from base, a very small spot (sometimes all but obsolete); close to apex, a faint ill-defined reddish curved transverse ray reaching to upper radial nervule. *Hind-wing:* all pale-red; base narrowly suffused with blackish; two moderately-sized spots in discoidal cell; two on closing nervules of cell; one above it; two below it, confluent with basal blackish; a strongly-curved irregular discal transverse row of eight spots, of which the first and sixth are larger and nearer base than the rest, extending from costa to inner-margin; a rather narrow fuscous hind-marginal border, with its inner edge regularly dentating the ground-colour between nervules, completely enclosing five or six small inter-nervular spots of the ground-colour, between costa and first median nervule.

UNDER SIDE.—Paler; markings of fore-wing only faintly visible; hind-wing creamy-whitish, varied with rufous, the markings conspicuous. *Fore-wing:* pale-red very faint, both in wide space and at apex. *Hind-wing:* basal black well marked, and enclosing two or three conspicuous creamy-white spots; other black spots as above, but more distinct; spots in hind-marginal border larger, creamy-white, six, with a seventh (between first median nervule and submedian nervule) incompletely enclosed interiorly; vaguely-defined rufous clouding on costa at base, along inner edge of hind-marginal border, and along inner margin.

♀ Similar, usually rather paler and duller, and with the spots often smaller.

An example (? ♀), captured in Socotra by Professor J. B. Balfour, has been noted and figured by Mr. A. G. Butler in *Proc. Zool. Soc. Lond.*, 1881, p. 177, pl. xviii. f. 5. This specimen has the blackish spots unusually large throughout, and the rufous colouring on the under side of the hind-wings is represented as less diffused, and forming distinct inter-nervular rays. In these respects it is nearer to the Abyssinian example figured by Reiche (*op. cit.*) than to specimens from the more southern parts of Africa.

Two ♂ specimens captured on the Gold Coast by Lieut. Richards, R.N., and presented by him to the South-African Museum, are unusually large (expanding 2 in. 8–9 lin.), and less rufous than usual, with the spots of hind-wing very well marked.

The species is closely allied to *A. Horta*, and may be said to occupy a position between that species and *A. Mahela*, Boisd., of Madagascar. From the former insect it constantly differs in its paler and duller ground-colour, in having spots on the fore-wings *beyond*, as well as in and below the discoidal cell, and in the complete black border of the hind-wings, which *encloses* the spots of the ground colour; its abdomen in both sexes being much paler than that of *Horta*, owing to the greater width (in most instances *confluence*) of the pale ochreous markings. The whitish spots on the head and on the back and pectus of the thorax are much more conspicuous, especially in the ♀, which possesses in addition a spot behind each eye, two spots on back of mesothorax, and two salmon-reddish spots on back of first abdominal segment. From *A. Mahela* (*Faune Entom. de Madagascar*, p. 31, pl. vi. fig. 1) the well-marked border of the hind-wings readily distinguishes it, the Madagascarene *Acræa* having only small fuscous spots at the extremities of the nervules; but the other markings are almost identical in the two butterflies, except that *Neobule*, like *Horta*, possesses some short reddish rays at the apex of the fore-wings, and has generally smaller spots than those of *Mahela*, besides being much more rufous in general colouring.

Localities of *Acræa Neobule.*

- I. South Africa.
  - B. Cape Colony.
    - *a.* Western Districts.—Victoria West (Kenhart: *F. Chittenden*).
    - *b.* Eastern Districts.—Bathurst (Kowie River Mouth: *Plant*). Colesberg (*A. F. Ortlepp*).
    - *d.* Basutoland (Maseru: *J. H. Bowker*).
  - E. Natal.
    - *a.* Coast Districts.—D'Urban.
    - *b.* Upper Districts.—Estcourt (*J. M. Hutchinson*).
  - K. Transvaal.—Potchefstroom (*T. Ayres*). Vaal and Hart Rivers (*T. Ayres*). Upper Limpopo River (*F. C. Selous*).

II. Other African Regions.
  A. South Tropical.
    a. West Coast.—Damaraland (*C. J. Andersson* and *John A. Bell*); also, "Swakop River (*Wahlberg*)."—Wallengren). Angola ("Boma: *J. J. Monteiro*—Druce). Congo [Coll. Brit. Mus.]
    *a*1. Interior.—Khama's Country, near Bamangwato (H. Barber). Tati (C. Hart). "Ramaqueban River (*Oates*)."—Westwood.
    b. East Coast.—"Lake Jipe (O. Kersten)."—Gerstäcker.
    *b*1. Interior.—"Victoria Nyanza (*Rev. J. Hannington*)."—A. G. Butler.
  B. North Tropical.
    a. West Coast.—Gold Coast (Lieut. Richards, R.N.) "Guinea"—Gerstäcker. "Senegambia"—Gerstäcker. "Gambia River"—Feisthamel.
    b. East Coast.—"Abyssinia (*Lefebvre*)"—Guérin-Meneville; and ("*Ferret et Galinier*")—Reiche.
    bb. Socotra (*Balfour*).

37. (4.) **Acræa cerasa**, Hewitson.

Acræa cerasa, Hewits., Exot. Butt., ii. pl. xx. f. 10 [♂] (1861).

Expl. al., (♂) 1 in. 5½–11 lin.; (♀) 1 in. 10 lin.—2 in. 3 lin.

♂ *Semi-transparent; brick-red with black spots; outer half of fore-wing and narrow hind-marginal border of hind-wing* (wider near apex) *fuscous-grey. Fore-wing:* base and inner margin near it blackish; red only extending as far as an oblique line from extremity of discoidal cell to a little before posterior angle; costa, apex, and hind-margin rather widely bordered with fuscous; in discoidal cell usually a large ovate black spot, and at its extremity a small sublinear spot; occasionally a minute spot near base below median nervure; and very rarely, two (one above the other) faintly marked on edge of red, about middle, above and below second median nervule. *Hind-wing:* base pale-fuscous; five spots in basal region, of which one is in discoidal cell; a central irregular transverse row of seven small spots. UNDER SIDE.—More glossy, paler, the red fainter, the spots not so well-defined; bases and margins scarcely fuscous. *Fore-wing:* spot at extremity of discoidal cell obsolete.

♀ *Larger; the red paler and duller. Hind-wing:* grey border wider in apical region; near hind-margin, between third median nervule and sub-median nervure, a row of three very small black spots.

There is much instability in the spotting of this butterfly as regards both size and number of spots. In several males taken near Pinetown in Natal the spots of the hind-wing are very small, and in one example are wholly wanting, with the exception of two near the base; while in one ♂ there is no spot in the fore-wing except the linear one at the extremity of the discoidal cell, and in another even that spot is obsolete.

LARVA.—Above livid-purplish; a central dorsal dull-greenish streak, edged on both sides by a linear series of small white marks, which on the anterior segments (two to five) are developed into thin transverse striæ; a similar series of minute white spots bounds lower edge of livid-purplish on each side; below this, each side is olive-greenish; under side and pro-legs light-green; head black, shining, striped frontally, superiorly, and laterally with white; legs pale-greenish, yellowish terminally. Dorsal spines on third to sixth segments considerably longer than the rest, erect, nearly straight, rather thick, with only a terminal bristle, dull-greyish; other spines throughout yellowish or greenish-white, set with a few whitish bristles; the dorsal ones inclining backward from the ninth to the anal segments. Length 1¼ in. Feeds on ; the very young larvæ, according to Colonel Bowker, advancing in a regular row, side by side, from the base of a leaf, eating away the parenchyma as they proceed.

PUPA.—Pale orange-yellow. Two dorsal rows of bright orange black-ringed acute tuberculated spots, and on each side a row of similar (but not tuberculated) spots, mark the abdominal segments, some of the incisions of which are dorsally thinly defined with black. Neuration of wings, and a median stripe along back of thorax, and head black; eyes and lines of antennæ and limbs also edged with black. Rather more curved than usual in *Acræa* pupæ; back of thorax very prominent, its lateral angles prominent; cephalic tubercles rather acutely pointed. Length ½ in.

(Colonel Bowker informed me as to the ground-colour of the pupa, which was much altered in the spirit specimens sent, and scarcely indicated in the single empty pupa skin previously received.)

A. Cerasa has much the look of an undersized *A. Horta* (Linn.), especially in the deep-red colour, the spotting of the hind-wing, and the fuscous bases of the wings. In the pattern of the spotting of the fore-wing it more resembles *A. Neobule*, Doubl. The colouring of the abdomen is intermediate in character, the lateral and terminal rufous being much more pronounced and developed than in *Horta*, but less so (and much deeper in hue) than in *Neobule*. From both species the absence of any black, pale, spotted hind-marginal border in the hind-wing at once separates *Cerasa*. Perhaps *Cerasa's* nearest ally is *A. Quirina* (Fab.), from Tropical Western Africa; but the latter differs very markedly in having the entire fore-wing transparent, with only a faint reddish tinge over the inner-marginal area, and in presenting a broad, even, well-defined hind-marginal transparent border in the hind-wing, interiorly bounded by a series of six small black spots.

Until 1883 this *Acræa* was only known to me by the type (a ♂) in the Hewitson Collection, and I felt some doubt whether it was more than a dwarfed aberration of *A. Neobule;* but Colonel Bowker changed the aspect of affairs by sending me two ♂s, taken on 2d April of that year near Pinetown in Natal. Others were met with by him in the same locality during April, May, and October 1883; and in January 1884 a ♂ was reared from a larva found in the verandah of the house. In the following March Colonel Bowker discovered the larvæ on their food-plant, and sent me full-grown specimens (as well as some pupæ in spirit) in the May ensuing, followed in June by more of the perfect insect. Among twenty-four examples received, only four were females, one of these being of the unusually large expanse of 2¼ inches.

Locality of *Acræa Cerasa.*

I. South Africa.
  E. Natal.
    a. Coast Districts.—Pinetown (*J. H. Bowker*).

38. (5.) Acræa Violarum, Boisuval.

Plate III. fig. 4 (♀).

Acræa Violarum, Boisd., App. Voy. de. Deleg. dans l'Afr. Aust., p. 591, n. 58 (1847).
♂ *Acræa Nataliensis*, Angas, Kafirs. Illustr., pl. xxx. f. 6 [♂] (1849).
♂ ♀ *Acræa Violarum*, Trimen, Rhop. Afr. Aust., i. p. 95, n. 59 (1862).

Exp. al., 2 in. 2 lin.—2 in. 4 lin.

♂ *Soft, creamy brick-red, with an orange tinge, spotted with black. Fore-wing:* base narrowly suffused with black; on hind-margin a narrow black border, widest at apex, diminishing to a point at anal angle; a short, black, transverse stripe, on costa before middle, crosses discoidal cell to insertion of first median nervule; a small, narrow, slightly-curved spot occupies the upper portion of the nervules closing discoidal cell; an elongate, transverse stripe of five connected black spots, a little beyond cell, from costa to second median nervule; two black spots below cell, touching median nervure, one between first and second median nervules, the other between median and submedian nervures; near hind-margin a transverse waved row of seven black, rounded inter-nervular spots of moderate size, extending from near costa to just above submedian nervure; a small black spot on inner margin, slightly beyond middle, and another larger spot a little beyond it, but *above* submedian nervure. *Hind-wing:* base suffused with black, which extends towards anal angle on both sides of median nervure; a spot across widest part of discoidal cell; a similar costal spot nearer base; a highly-irregular and much interrupted discal row of seven rather small spots; a rather broad black band along hind-margin, slightly but regularly dentate on its inner edge, and containing six or seven small, pale-yellowish spots between nervules. Under side.—*Paler than upper side, with a peculiarly glossy appearance;* black spots not so large. *Fore-wing:* base without black suffusion; at apex, two or three yellowish-white spots in the black marginal stripe. *Hind-wing:* base but narrowly black; spots more distinct than on upper side, some additional ones near base being clearly visible, viz., a small one on costa close to base; a small round one in discoidal cell; a very large elongate one between origin of first median nervule and inner margin; and two spots on inner margin—one near base and the other an eighth spot in discal row; spots on hind-margin very large, conspicuous, paler than above, seven or eight in number. Fringes of wings yellow.

♀ Spotted and otherwise marked as in ♂; but ground-colour much duller, varying from pale reddish-ochreous to obscure ochreous-brown inclining to pale-fuscous; the spots usually larger, and the hind-marginal border of the hind-wings wider.

A ♀ specimen in the Hewitson collection has a dull-whitish suffusion over the upper median region of the hind-wings.

I met with this handsome *Acræa* not uncommonly in Natal, where it frequents hillsides and table-lands, preferring the sheltered hollows. Its flight is very low, and it often settles among the herbage and on flowers. Though having the gregarious inclination of the *Acrææ* generally, this butterfly was in no place at all abundant, but was more prevalent inland than on the coast. February and March were the months in which my specimens were captured, but Angas (*op. cit.*) notes the species as occurring in October.

Localities of *Acræa Violarum*.

- I. South Africa.
  - D. Kaffraria Proper.—Jojo's Country, North Pondoland (*Sir H. Barkly*).
  - E. Natal.
    - *a.* Coast Districts.—D'Urban (*J. H. Bowker*). Umhlanga. Verulam. Mapumulo.
    - *b.* Upper Districts.—Fort Buckingham, Tugela. Hermansburg. Intzutze, Great Noodsberg.
  - F. Zululand.—St. Lucia Bay (*H. Tower*).
  - K. Transvaal.—Potchefstroom and Lydenburg (*T. Ayres*).

39. (6.) **Acræa Nohara**, Boisduval.

Acræa Nohara, Boisd., App. Voy. de Deleg. dans l'Afr. Aust., p. 590, n. 54 [♂] (1847).
Acræa Actiaca, Hewits., Exot. Butt., i. pl. 29, f. 3 [♂] (1852).
Acræa Nohara, Wallengr., Lep. Rhop. Caffr., p. 21, n. 5 [♀] (1857).
,, ,, Trimen, Rhop. Afr. Aust., i. p. 96 (1862); ii. pl. 3, f. 1 [♂] (1866).

Exp. al., 1 in. 8 lin.—2 in. 2 lin.

♂ *Bright brick-red, with black spots and borders.* *Fore-wing:* border beginning as a very thin linear edging on costa near base, gradually widening to apex (but not broad there), and thence narrowing along hind-margin to a point at posterior angle; hind-marginal part of border emitting black rays along the nervules,—the longest rays towards apex; base black, most widely on inner margin; two spots in discoidal cell, one elongate-ovate just beyond its middle,—the other broader, squarer, at its extremity; about midway between end of cell and apical border, an oblique macular bar formed of five spots, of which the first, on costa, is smallest and often obsolete, and the last, between third and second median nervules, usually separate from and placed at an angle with the fourth spot; below median nervure and not far from terminal cellular spot, a rather large rounded spot; beyond this, a small spot, below first median nervule; near basal black, below median nervure, a small round spot. *Hind-wing:* basal black very narrow next costa, wide in discoidal cell, and very wide below cell; an elongate spot in cell and one at the upper part of end of cell; a very irregular discal row of seven spots, of which the second, third, fifth, and seventh are farther from base than the others; a spot on costa before middle; an even hind-marginal border, very much broader than in fore-wing, unspotted, and emitting little more than denticulations on the nervules. Cilia dull-whitish. UNDER SIDE.—*Much paler;* the surface smoother, that of the fore-wing shining. *Fore-wing:* spots duller, with suffused edges; a small black spot on costa at base; basal black otherwise all but obsolete; costal and hind-marginal border somewhat narrower; from it run inter-nervular pale-rufous rays, diminishing in length towards posterior angle; some pale-yellowish irroration marks inner edge of border generally, but especially on costa at apex. *Hind-wing:* spots more conspicuous than on upper side; basal black suffusion obsolete, but the clearer ground exhibiting six additional spots, of which two are above, one in and three below discoidal cell; between the spots in and below cell some pale-yellowish irroration; two additional spots (eighth and ninth) at lower end of discal row; in outer portion of hind-marginal border a row of seven large sub-lunulate pale-yellowish spots. Cilia yellowish-white.

♀ *Pale dull brownish-ochreous*, with fore-wing semi-transparent on disc; spots and border somewhat larger than in ♂. UNDER SIDE.—*Hind-wing and apical portion of fore-wing very pale-yellowish;* the hind-wing variegated with reddish-pink in the basal region and as far as discal row of spots.

This species is readily distinguished from its nearest ally, *A. Violarum*, Boisd., by its want in the fore-wings of the conspicuous submarginal row of black spots, and in the hind-wings of any pale spots in the hind-marginal border on the upper side. This *Acræa* has in all respects the habits and haunts of *A. Violarum*, and the two species may often be met with flying in company. *Nohara* was in the summer of 1867 much more numerous than *Violarum* in the hilly parts of Natal; especially near Hermansburg, where, chiefly in sheltered hollows, I took a large number of specimens, including two pairs *in copulâ*.

Localities of *Acræa Nohara*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Tongaati River. Mapumulo.
    b. Upper Districts.—Udland's Mission Station. Fort Buckingham, Tugela River. Hermansburg. Little Noodsberg. Intzutze, Great Noodsberg. Pietermaritzburg (*Windham*). Karkloof (*J. H. Bowker*).
  K. Transvaal.—Lydenburg District (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    a. West Coast.—" Angola (*Pogge*)."—Dewitz.

40. (7.) **Acræa Petræa,** Boisduval.

♂ *Acræa Petræa*, Boisd., App. Voy. de Deleg. dans l'Afr. Aust., p. 489, n. 49 (1847).
♂ and ♀ *Acræa Petræa*, Trim., Rhop. Afr. Aust., i. p. 100, n. 63 (1862).
♀ and ♀ *Acræa Petræa*, Hopff., in Peters' Reisenach Mossamb., Ins., p. 373, pl. xxiv. ff. 1–4 (1862).
♂ *Acræa Petræa*, var., Oberth., Etud. d'Ent., iii. p. 26, pl. ii. f. 4 (1878).

Exp. al., 1 in. 11 lin.—2 in. 5. lin.

♂ *Deep-red* (*inclining to carmine*), *with black spots and borders. Fore-wing:* base suffused with black, rather widely so towards inner margin; costa rather narrowly edged with black; whole of hind-margin with a narrow black border, which emits strongly-marked nervular rays; apex also more or less clouded with blackish near the border; two good-sized spots in discoidal cell, the outer one touching an oblique black mark on costa immediately above it; a spot, variable in size, at extremity of cell; beyond it, but very close, a rather wide, irregularly-shaped, black stripe from costa to near middle of hind-margin, where its extremity touches, or almost touches, the first of a row of three spots parallel to hind-margin, between third median nervule and submedian nervure; above first median nervule, close to its insertion, a rather large, rounded, black spot; below the same nervule, a little beyond the latter spot, a similar, more kidney-shaped spot; a more or less distinct small black spot beyond middle, on inner margin, which is *very narrowly* edged with black. *Hind-wing:* base suffused with black on both sides of median nervure; about twelve rather small, round, black spots *in basal half of wing*, the outer seven or eight of which form a sinuated transverse row; a curved black streak at upper portion of extremity of discoidal cell; hind-margin with a moderately broad black border, unspotted, which radiates strongly upon nervules. UNDER SIDE.—*Paler and duller* than upper side. *Fore-wing:* dull, creamy salmon-red; a small black mark on costa at base, but no black suffusion; two spots nearest to base wanting; the other spots similar in number and arrangement, but dull-blackish; an additional small black spot just below median nervure, before middle; beyond the blackish stripe a small space clouded with *whitish;* no black border on hind-margin, but the nervules are clouded with dark-grey near it, and there are broad, reddish-ochre rays between the nervules all along hind-marginal border. *Hind-wing: reddish-white;* black spots as on upper side, but three or four more visible close to base, all very conspicuous; interspersed among the spots several pale-reddish marks; hind-marginal band blackish, radiating in dark-grey on the nervules, and containing seven elongate, yellowish or yellowish-white spots, between nervules, along its outer portion; immediately within band a row of elongate, wedge-shaped, reddish-ochre marks between nervules.

♀ *Very different from* ♂, *varying in ground-colour from dull-red to dull-greyish or ochreous-brown, and even to brownish-fuscous. Fore-wing:*

black spots less conspicuous than in ♂, but similar in number and arrangement (except that the spot nearest base is wanting); beyond black costal stripe *a large, very conspicuous, broad, white patch*, divided into six portions by crossing nervules, the two sections next costa being very small and narrow, the lower edge of the white touching second median nervule; apex more broadly and darkly clouded with blackish. *Hind-wing:* paler, more ochreous than fore-wing; marked as in ♂, but radiations of black on nervules from hind-marginal border usually broader and more strongly marked, making the inter-nervular rays of the ground-colour narrower and more acute. UNDER SIDE.—*Fore-wing:* paler than on upper side; white patch less conspicuous; spots as in ♂; nervules clouded with blackish near hind-margin; inter-nervular rays dull yellow-ochreous. *Hind-wing: dull yellowish-white;* black spots as in ♂; interspersed pale-reddish marks very faint or wanting; spots in hind-marginal border yellower than in ♂; inter-nervular marks immediately before border ill-defined, dull yellow-ochreous, usually irrorated thinly with fuscous on their inner side.

VAR. ♂.—All the black markings smaller and less dark than in type form, especially the hind-marginal borders and the oblique bar of fore-wing. *Hind-wing:* the second, third, and fifth spots of median transverse row wanting.

Hab.—“Tchouaka.”—Oberthür.

LARVA.—“Back yellowish-brown, with transverse blackish streaks; dorsal stripe and sides purplish-black, the latter much lighter about spiracles; lateral inflation edged with light-yellow, almost white. UNDER SIDE.—Light bluish-green; ventral claspers and pro-legs yellowish. Head black and polished, larger than second segment; mouth and bifid mark on forehead white; in some specimens also two small white streaks on summit of head. Spines steely-black, largest on third, fourth, and fifth segments; a suffusion of white at the base of all excepting those on the second, third, fourth, and fifth segments. About $\frac{7}{8}$-inch in length.”—*H. C. Harford, in litt.*

Of the younger larvæ Mr. Harford remarks that they have very few black markings, and no dorsal or lateral stripes, but that these gradually appear and grow more distinct with the development of the insect. He further observes that the larvæ feed on a tree in great numbers together, and that, when the bough upon which they are so congregated is shaken with any violence, they lower themselves to the ground by a silken thread, and there, lying still, are with great difficulty to be detected among the dead leaves and débris.

PUPA.—Pale-grey anteriorly; the outlines of the head and limbs and the nervures of wings finely defined with black. Abdominal region of a browner tint; spots of the usual rows ochreous-yellow in black rings, separate from each other.

Described from a drawing of Mr. Harford's, giving a lateral view.

This species is extremely variable in the markings of the ♂ and in the colouring of the ♀. The following is a very striking

Aberration.—♂ *Fore-wing entirely dull-black;* hind-wing with black border much widened, and inwardly suffused. UNDER SIDE.—Fore-wing: basal area tinged with dull-red to about middle, with traces of a few spots. *Hind-wing:* hind-marginal border much suffused, so as almost to obliterate both the yellowish-white spots it contains and the reddish marks bounding it inwardly.

Hab.—Pinetown, Natal (J. H. Bowker, June 1881). In the collection of the South-African Museum.

The Querimba specimens figured by Hopffer (*loc. cit.*) are smaller, paler, and with much less pronounced dark markings, especially in the ♀, than the Natalian type-form, with the single exception that the dark borders in the ♂ are rather broader. The ♂ is thus an approach to the more northern variety figured by M. Oberthür, who must, I imagine, be mistaken in the statement (*op. cit.*) that the sexes of this variety are "absolument semblables entre eux," the white subapical bar of the fore-wing being very constant in all the ♀ *Petræa* that I have seen, whatever varying tint the ground-colour might present.

There is no known South-African *Acræa* that *A. Petræa* closely resembles, but it is not distantly related to *A. Cepheus* (Linn.), a native of Angola, which has, however, a very much broader hind-marginal dark border in the fore-wings.[1] A feature very distinctive of *Petræa* is *the wide distance in the hind-wings of the transverse row of spots from the hind-margin*, the row being strictly not discal, but median.

A. Petræa is abundant round D'Urban, Port Natal, where I found it constantly on the wing from the end of January to the beginning of April 1867. It keeps to woods and their immediate neighbourhood; and a company of the slowly-flying, richly-coloured males in the full sunshine, conspicuous on a background of intensely green foliage, is a striking sight, not easily forgotten.

Localities of *Acræa Petræa*.

- I. South Africa.
  - E. Natal.
    - *a.* Coast Districts.—D'Urban.
    - *b.* Upper Districts.—Pietermaritzburg (*Miss Colenso* and *W. Hayes*).
- II. Other African Regions.
  - A. South Tropical.
    - *a.* Western Coast.—"Angola (*Pogge*) and Chinchoxo (*Falkenstein*)."—Dewitz.
    - *b.* Eastern Coast.—"Querimba."—Hopffer. "Tchouaka (*A. Raffray*)."—Oberthür.

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[1] The specimens noted as *A. Cepheus* by Mr. A. G. Butler (*Ann. and Mag. Nat. Hist.*, Dec. 1875, p. 395), brought from Natal by Mr. Burrowes, and presented to the British Museum, are unquestionably examples of *A. Petræa*.

41. (8.) **Acræa Doubledayi**, Guérin.

♀ *Acræa Doubledayi*, Guér., Voy. Lefebv. en Abys., vi. p. 378 (1847).
♀ „ „ Reiche, in Ferr. et Gal., Voy. en Abyss., iii. pl. 33, ff. 1, 2 (1849).
♂ and ♀ *Acræa Oncæa*, Hopff., "Monatsber. Verh. Akad. Berl., 1855, p. 640, n. 6;" and Peters' Reise nach Mossamb., p. 375, pl. xxiv. ff. 5–8 (1862).
Var. A. ♂ and ♀ *Acræa Oncæa*, var. *Neluska*, Oberthür, Etudes d'Ent., liv. iii. p. 25, pl. ii. ff. 2, 3 (1878).
Var. B. ♂ *Acræa Axina*, Westw., App. Oates' Matabele Land, p. 344, n. 33, pl. F, ff. 5, 6 (1881).

Exp. al., 1 in. 10½ lin.—2 in. 2 lin.

♂ *Pale creamy reddish-ochreous, with a slight tinge of pink; with small black spots and narrow black borders. Fore-wing:* semi-transparent; basal portion rather dusky, the base itself narrowly black; in discoidal cell, rather beyond its middle, an elongate spot; at upper part of extremity of cell a similar thinner spot; a little beyond cell an oblique row from near costal edge of five small spots, of which the first or second (sometimes both) are obsolete, and the fifth, below third median nervule, is distinctly separate from the rest; below cell, in a line with its terminal spot, two spots, one above, the other below, first median nervule; nearer to base than all the others, a small round spot below median nervure; black border merely linear along costa till near apex, where it widens to form rather a wide apical tip, but thence becomes very narrow along hind-margin and linear near posterior angle; along hind-margin the border emits linear nervular rays; between upper radial and second median nervule, two (sometimes three) inter-nervular short linear black rays, not united with hind-marginal border. *Hind-wing:* base suffused with blackish, principally below discoidal cell; in cell two spots, the outer one larger, elongate; a spot at upper part of extremity of cell; another on costa before middle; another below median nervure; a very irregular discal row of seven spots, of which the first, fourth (just outside end of cell), and sixth are nearer to base than the rest; the border along hind-margin varies from consisting of a terminal thin edging, preceded by a suffused festooned streak (failing towards anal angle) enclosing spots of the ground-colour, to being moderately-broad and unspotted. Cilia pale greyish-ochreous. UNDER SIDE.—*Hind-wing pale creamy-yellowish, varied with dull-pink* basally, inner-marginally, and towards hind-margin; spots of fore-wing less, those of hind-wing more conspicuous than on upper side. *Fore-wing:* two small spots on costa at base; no basal blackish; very narrow linear costal and hind-marginal black edging inwardly bounded by pale-yellowish irroration, most noticeable at and near apex; the incomplete subapical black inter-nervular streaks are continued to hind-marginal edging as orange-ochreous streaks; above them one long wholly orange-ochreous inter-nervular streak. *Hind-wing:* a small spot at origin of costal nervure; another on costa close to base; another at base below median nervure; a fourth on inner margin near base; an additional (eighth) spot at inner-marginal end of discal row; hind-marginal border enclosing seven large sub-lunulate spots of the creamy-yellowish ground-colour; the dull-pink preceding it in the form of broad inter-nervular discal rays.

♀ *Varying from dull pale reddish-brown to dull dark greyish-brown; spots larger and dark borders broader in parts; fore-wing with an oblique subapical white bar.* *Fore-wing:* blackish border much broader at apex; white bar variable in definition and width, but widest and most conspicuous in the darker individuals, immediately succeeding oblique row of black spots, not extending below second median nervule. *Hind-wing:* hind-marginal border usually broader throughout, sometimes enclosing a row of seven very indistinct spots of the ground-colour. UNDER SIDE.—Paler than in ♂. *Fore-wing:* apical pale-yellowish extending to subapical white bar, which is not nearly so clearly defined as on upper side. *Hind-wing:* pink variegation usually less pronounced, and in the darker individuals all but obsolete.

A small ♂, taken by Mr. W. Morant at Avoca, on the coast of Natal, has on hind-wings a limited roundish space of white between the median nervure and its second nervule and the inner margin.

A small ♀, taken by the late Mr. E. C. Buxton in Swaziland, is very near the figure of Guérin's type, having the apical region of fore-wing paler, and the discal region of hind-wing redder than the rest of the wing; and on the under side the inter-nervular fulvous and pink rays very strongly marked.

VAR. A. (*Neluska*, Oberthür).

♂ *Fore-wing:* apical border considerably broader; subapical inter-nervular black rays wanting. UNDER SIDE.—Pale reddish ground-colour almost uniform throughout. ♀ Like the duskier individuals of the typical *Doubledayi*, but in the *fore-wing* only one small spot of the subapical oblique row perceptible, and the white bar altogether wanting.

Hab.—Zanzibar.

VAR. B. (*Axina*, Westw.)

♂ *Exp. al.*, 1 in. 8–10½ lin.

Brighter in colour, with a tinge of pink in hind-wing. *Fore-wing:* two small spots near posterior angle wanting; spot in middle of cell larger; below the subapical inter-nervular streaks usually a third, and sometimes also a fourth similar shorter streak. *Hind-wing:* third spot (from costa) of discal row wanting.

♀ *Exp. al.*, 1 in. 7–8½ lin.

Paler; differences of spots as in ♂, except that one specimen possesses the third spot in hind-wing row. *Fore-wing:* subapical white bar very narrow, externally ill-defined; inter-nervular rays increased to six, the last (near posterior angle) a double streak.

One ♀, taken on the Marico River by Mr. F. C. Selous, has nearly all the disc of the hind-wings suffused with white.

A. Doubledayi is a near ally of *A. Cæcilia*, Fab. (*Hypatia*, Dru.), a well-known West-African species, but, as far as the ♂ sex is concerned, may readily be recognised by its more rufous colour (extending to the terminal half of the abdomen), narrower blackish borders, smaller spots, and much less pronounced basal blackish; while on the under side the spots in the hind-marginal black border are larger. It has no closely-related known South-African form, the least distant, *A. Stenobea*, Wallengr., having the sexes almost alike, and remarkably suffused with black over all the basal region of the fore-wings. The ♀ *Doubledayi* bears a superficial resemblance to the ♀ *A. Petræa*, Boisd., as well as to the reddish-brown form of *A. Lycia*, Fab. From the former it is at once distinguished by its much smaller and more separate spots, and much narrower and less conspicuous subapical white bar of the fore-wings, and from the latter by its possession of a black border to the hind-wings. The variety A. (*Neluska*, Oberth.) decidedly approaches in character the closely-allied *A. Caldarena*, Hewits., in which both sexes possess a very broad black tip to the fore-wing.

From January to April 1867 I found this butterfly abundant near D'Urban, Port Natal, and the late Mr. M'Ken and Colonel Bowker have since sent many specimens from that neighbourhood to the South-African Museum. It is a very slow flyer, chiefly frequenting wooded spots. I took the sexes paired on March 24th, and Colonel Bowker has since 1877 sent me several pairs captured *in copulâ.*

Localities of *Acræa Doubledayi.*

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban. Avoca and Pinetown (*W. Morant*).
  H. Delagoa Bay.—Lorenço Marques (*J. J. Monteiro*).
  K. Transvaal.—Marico River and Upper Limpopo River.—Var. *Axina*, Westw. (*F. C. Selous*).

II. Other African Regions.
  A. South Tropical.
    *a*1. Interior.—"Tati and Gwailo River.—Var. *Axina*, Westw. (*F. Oates*)."—Westwood.
    b. Eastern Coast.—Zambesi (*Rev. H. Rowley*). Zanzibar. "Zanzibar;—var. *Neluska*, Oberth. (*A. Raffray*)."—Oberthür.
  B. North Tropical.
    b. Eastern Coast.—"Abyssinia (*Lefebvre*)."—Guérin-Meneville, and ("*Ferret et Galinier*") Reiche.

42. (9.) **Acræa Caldarena,** Hewitson.

♂ *Acræa Caldarena*, Hewits., Ent. M. Mag., xiv. p. 52 (1877).
♂ *Acræa Amphimalla*, Westw., App. Oates' Matabele Land, p. 347, n. 37, pl. E, ff. 1, 2 (1881).

Exp. al., 1 in. 9 lin.—2 in. 6 lin.

♂ *Pale creamy-ochreous, with more or less of a pink tinge* (especially in hind-wing), *with small black spots; apex of fore-wing very widely black. Fore-wing:* apical black extending from costa to end of second median nervule; a little before inner edge of apical black, but not quite parallel with it, an oblique row of three or four spots; an elongate spot at extremity of cell; another in cell towards extremity; a spot below median nervure, not far from base; two spots almost in a line with and below spot at extremity of cell, one above, the other below first median nervure; base moderately suffused with dusky-grey; costal and hind-marginal black edging line very attenuated. *Hind-wing:* basal and disco-cellular spots, and discal row of eight spots, quite as in *Doubledayi*, but smaller and often indistinct (excepting the two near and at extremity of cell, and the two beyond cell respectively above and below third median nervule); hind-marginal border consisting of a terminal black line and an inner fainter festooned line enclosing between them seven elongate spots of the ground-colour; towards anal angle the festooned line becomes fainter and sometimes obsolete. UNDER SIDE.—Paler. *Fore-wing:* apical black *wanting*, replaced by greyish-yellow, crossed by yellow-ochreous inter-nervular rays from hind-margin; no basal suffusion; two small black spots on costa near base; other spots as on upper side. *Hind-wing:* pale-yellowish, varied near base and as far as middle with pinkish-red (leaving rings of the pale ground-colour about the black spots); hind-marginal and sub-marginal lines more defined, their enclosed spots of the pale ground-colour; a little before the border, and leaving a bounding line of the ground-colour, a series of broad, short, inter-nervular, yellow-ochreous rays; spots as on upper side, but more constant and much better marked.

♀ *Paler, duller; basal suffusion wider, darker, in hind-wing extending over inner-marginal area. Hind-wing:* hind-marginal border much wider, suffused, its enclosed spots almost obsolete. UNDER SIDE.—As in ♂, but paler; spots of hind-wing larger.

This butterfly is very closely related to *A. Doubledayi*, Guér., but at once distinguishable by the very conspicuous broad black tip of the fore-wing. In the ♂ the ground-colour is paler and with less of a fulvous tinge, and the fore-wing is less transparent; while in the only ♀ I have seen (from Tati) there is no trace whatever of the subapical whitish bar of *Doubledayi* ♀. *Acræa Dircæa*, Westw. (*loc. cit.*, p. 348, n. 42), seems from the short diagnosis given not to be separable from *A. Caldarena.*

The species appears only just to enter the extra-tropical region. Hewitson (*l. c.*) notes that it was received "in abundance" from Lake Nyassa, and had previously been sent from the Transvaal by Dr. Bradshaw. Specimens have reached the South-African Museum at different times from the Matabele Country and the Zambesi Valley, and also one from Damaraland; while recently (April 1882) Mr. F. C. Selous collected several individuals on the Marico and Upper Limpopo in the North-West Transvaal, and forwarded them to me, with many other species, for determination.

Localities of *Acræa Caldarena.*

- I. South Africa.
  - K. Transvaal.—Upper Limpopo and Marico Rivers (*F. C. Selous*).
- II. Other African Regions.
  - A. South Tropical.
    - *a.* Western Coast.—Damaraland (*Hutchinson*).
    - *a*1. Interior.—Between Limpopo and Zambesi Rivers (*T. Ayres*). "Motloutsi River and Tati (*F. Oates*)."—Westwood. Zambesi (*F. H. Barber*).

43. (10.) Acræa Aglaonice, Westwood.

PLATE III. fig. 3 (♂).

♂ *Acræa Aglaonice*, Westw., App. to Oates' "Matabele Land," 1881, p. 346, n. 35, pl. F, ff. 9, 10.
♂ *Acræa fenestrata*, Trimen,[1] Trans. Ent. Soc. Lond., 1881, p. 435.

Exp. al., (♂) 2 in. 2 lin.; (♀) 2 in. 6 lin.

♂ *Warm fulvous-ochreous, inclining to rufous, with narrow black borders and a few black spots. Fore-wing:* base very narrowly marked with black, which extends for a little distance along inner margin; costa very thinly black-edged from near base, but more widely near apex; hind-margin narrowly black-edged throughout, and all the nervules near it clearly defined with black, those near apex for the greatest length, and the submedian nervure least of all; basal area thinly irrorated with black; in discoidal cell near extremity a moderate-sized reniform spot; at extremity an elongate and more irregular marking of about the same size; a little beyond the cell, between subcostal nervure and third median nervule, an oblique row of three small rounded contiguous spots; immediately bounding the second and third spots of this row externally, two small elongate transparent markings with ill-defined edges; below the third spot of the row, and well separated from it, a very small rounded black spot, between third and second median nervules; a similar slightly larger spot between median and submedian nervures, on edge of basal irroration; and a third, larger and not so rounded, between first median nervule and submedian nervure beyond middle. *Hind-wing:* base more widely marked with black than in fore-wing; black spots very small and few in number, viz., two in discoidal cell (that near base confounded with black suffusion); one on upper disco-cellular nervule; one above and one below cell; and five minute ones in a very irregular discal row about middle (interrupted widely about the branching of median nervure), of which only the first, fourth, and fifth are distinct; hind-margin with a rather narrow, well-marked, unspotted black border. UNDER SIDE.—*Hind-wing and apical area of fore-wing cream-colour dusted finely with grey. Fore-wing:* a narrow edging of cream-colour along costa; spots as on upper side, with the addition of a black dot on costa at base; ground-colour paler, more glossy, inclining to pink; apical and hind-marginal cream-colour crossed by conspicuous inter-nervular orange rays, of which the longest is between subcostal nervure and upper radial; nervules and hind-margins more finely and thinly defined with black than on upper side, particularly the latter. *Hind-wing:* black spots better defined than on upper side, especially those of median transverse row; an additional one on costa near base; another on inner margin near base; and two between submedian nervure and inner margin a little before termination of median row; a very thin hind-marginal black edging line preceded at a little distance by an equally thin festooned line; the space between these two lines is clear cream-colour, without irroration, but is crossed by the very fine black nervular lines; before the festooned line a row of eight conspicuous cuneate orange markings of about equal size, the eighth interiorly becoming pink; other dispersed pink markings, irregular in form and size, before middle, viz., one on costa at base, two above, one in, one at extremity, one beyond, and two below discoidal cell; and a long ray along inner margin.

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[1] In explanation of my having named and described this species so soon after Professor Westwood, I may mention that the paper referred to was read on the 3d August 1881, when the work containing *A. Aglaonice* had not appeared. The work in question was published on the 15th August, whereas Part III. of the *Entomological Society's Transactions*, containing my paper, was not published until the 7th September.

♀ *Very different from ♂. Fore-wing: dull ochreous-yellow; base widely clouded with blackish* as far as middle of discoidal cell, and thence the median area suffused with brown; black edging wider generally, but especially at apex; black spots and two transparent spots as in ♂. *Hind-wing: creamy-reddish; spots larger; base widely clouded with blackish; hind-marginal black border very much broader*, suffusedly radiating inwardly on nervules; ground-colour between rays clouded with brown. UNDER SIDE.—As in ♂, but paler and duller. *Hind-wing:* submarginal streak thicker and more deeply festooned.

The ♂ of this very distinct *Acræa* exhibits affinities with *A. Nohara*, Boisd., *A. Doubledayi*, Guér., and *A. Anacreon*, mihi; its upper surface colouring and markings resembling those of the first named; its markings generally that of the second; and its under surface colouring that of the third. From all three, and indeed from all the other *Acrææ* that I have examined, it may readily be recognised by the two peculiar diaphanous spots immediately following the costal transverse macular black bar beyond the middle of the fore-wings. The singularly minute black spots of the hind-wings are also a very marked character in *A. Aglaonice*.

The ♀ is above described from a single Delagoa Bay example given me by Mrs. Monteiro. Its general appearance and pattern strikingly resemble those of *A. Natalica*, Boisd., but it is a much smaller insect. Two ♀s received from Mr. F. C. Selous, who took them on the Marico and Upper Limpopo Rivers early in 1882, agree entirely with the ♀ in question except in their smaller size (2 in. 1–2 lin.)

A single male of this butterfly was contained in the collection purchased by the South-African Museum in 1879 from Mr. T. Ayres. It is noted in Mr. Ayres's list as having been captured in the Lydenburg district of the Transvaal. There are two males in the Hewitson Collection of the British Museum labelled "Transvaal," and Mrs. Monteiro possesses another taken at Delagoa Bay.

The male specimen on which Professor Westwood founded the species was brought from Tati (21° 28′ S.) by the late Mr. F. Oates, and, as figured, presents larger transparent spots than the Lydenburg example above described. Three males from the Marico and Upper Limpopo Rivers, received with the two females above mentioned, have the hind-marginal black border rather broader at apex of fore-wing and much broader throughout in hind-wing.

Localities of *Acræa Aglaonice*.

I. South Africa.

K. Transvaal.—Lydenburg District (*T. Ayres*). Marico and Upper Limpopo Rivers (*F. C. Selous*).

II. Other African Regions.
A. South Tropical.
*a*1. Interior.—" Tati (*Oates*)."—Westwood.

44. (11.) **Acræa Stenobea,** Wallengren.

Plate III. fig. 2 (♂).

Acræa Stenobea, Wallengr., Wien. Ent. Monatschr., 1860, p. 35, n. 9; and K. Vet.-Akad. Förh., 1872, p. 49, n. 24 [♂].
♂ *Acræa Acronycta*, Westw., App. Oates' Matabele Land, p. 346, n. 36, pl. F, ff. 11, 12 (1881).
Var. A.—*Acræa Lygus*, Druce, Proc. Zool. Soc. Lond., 1875, p. 408, n. 21.
" ♀ *Acræa Natalica* (variation), Trim., Trans. Ent. Soc. Lond., 1870, p. 346.

Exp. al., 2 in.—2 in. 6 lin.

♂ *Pale creamy yellow-ochreous, the fore-wing darker and tinged with brown, the hind-wing paler and tinged with pink; black spots few; bases strongly suffused with blackish. Fore-wing:* a very narrow black edging from base to posterior angle, widening slightly at apex; a large spot in discoidal cell towards its extremity, and a small spot nearer base below median nervure, are almost indistinguishable in the basal suffusion; a large spot at extremity of cell; below it two smaller rounded spots, one above the other, the first median nervule passing between them; between end of cell and apex, but nearer to the former, a well-marked oblique bar of five spots, of which only the lowest spot is separated from the rest; all the nervules finely but distinctly black in outer portion of wing. *Hind-wing:* basal suffusion very much more restricted than in fore-wing, extending usually to about middle of discoidal cell; spots in and at extremity of cell as in fore-wing, but smaller; a small spot on costa before middle; a discal row of only three (or sometimes two) widely-separated spots; between the costal and subradial of these spots (which are always present), occasionally traces of two very small spots; a moderately-wide hind-marginal blackish border, indented regularly with the ground-colour on nervules, and enclosing faint indications of paler spots. Cilia whitish. Under side.—Paler; hind-wing creamy-whitish, more or less generally clouded with reddish-pink. *Fore-wing:* basal suffusion almost obsolete; spots duller, slightly suffused; blackish edging narrower; two small spots on costa at base; some whitish scaling near apex, chiefly on costa; from hind-margin a series of rather indistinct inter-nervular orange-ochreous rays; occasionally a very small spot below first median nervule near hind-margin. *Hind-wing:* no basal blackish suffusion; the reddish-pink clouding leaves a whitish ring round each spot, and a well-marked whitish inner edging to the hind-marginal border,—it is strongest near base and towards hind-margin; discal row of spots less imperfect, the number varying from four to eight, the most constant additional spots being two small ones on inner margin; an irregular black basal marking enclosing a white spot; a small black spot on costa, near base, and a large elongate one a little farther from base; hind-marginal border enclosing seven large whitish sub-trigonate spots.

♀ Darker; the basal suffusion in fore-wing ill-defined, gradually shading off into brownish. *Hind-wing:* hind-marginal border broader, its inner edge not regularly denticulated but rather suffused; a conspicuous white cloud on lower part of disc, covering median nervules about their origin, and extending to submedian nervure. UNDER SIDE.—*Fore-wing:* apical whitish developed over some space; blackish spots more distinct.

VAR. A. ♂ and ♀ (*Lygus*, Druce).

♂ Basal blackish suffusion less pronounced in fore-wing; black spots smaller, *especially those of oblique bar beyond discoidal cell, which are separate from each other,* and only three or four in number; in hind-wing the hind-marginal border broader. UNDER SIDE.—*Hind-wing:* ground-colour duller, more rufous; the spots in the hind-marginal border much smaller, so as to occupy only the outer part of the border.

♀ General differences like those presented by ♂. *Hind-wing:* basal suffusion and hind-marginal border much broader and darker.

Hab.—Eastern extremity of Cape Colony, Basutoland, and Angola.

This rather sombre-coloured *Acræa* is allied to *A. Cecilia,* Fab., but is easily distinguished by its yellow-ochreous ground-colour and much wider dark basal suffusion, while the hind-marginal border is narrower, and there are fewer discal spots. The white cloud on the hind-wing of the ♀, though variable in extent, seems invariably present. The reddish-pink clouding on the under side of the hind-wing is remarkably developed in some fine examples collected by Mr. F. C. Selous on the Upper Limpopo, especially in the ♂s.

Stenobea is also closely related to *A. Natalica*, Boisd., and may indeed be regarded as linking that species and *Cæcilia.* Its distinctive characters are smaller size; paler, clearer ground-colour (especially in hind-wing); wider, more suffused basal, but very much narrower apical, black in fore-wing; want in the same wing of the outer discal series of spots; and more imperfect discal row of spots, and very much narrower and unsuffused hind-marginal border, of hind-wing.

In 1872 Mr. W. Morant sent me the paired sexes of *A. Stenobea*, captured at Hebron, on the Vaal River, Griqualand West.

Localities of *Acræa Stenobea.*

- I. South Africa.
  - B. Cape Colony.
    - *b.* Eastern Districts.—Colesberg (*A. F. Ortlepp*). King William's Town [Var. *Lygus*, Druce] (*Capt. G. C. Swiney*).
    - *c.* Griqualand West.—Hebron, Diamond Fields (*W. Morant*). Vaal River (*J. H. Bowker*).
    - *d.* Basutoland.—Maseru [Var. *Lygus*, Druce] (J. H. Bowker).
  - K. Transvaal.—Potchefstroom District (*T. Ayres*). Upper Limpopo (*F. C. Selous*).
  - L. Bechuanaland.—Motito (*Rev. J. Frédoux*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—Damaraland (*C. J. Andersson* and *J. A. Bell*). "River Swakop (Wahlberg)." — Wallengren. Angola [Var. *Lygus*, Druce] (*J. J. Monteiro*).
    *a*1. Interior.—Khama's Country, near Bamangwato (*H. Barber*). Tati (*C. Hart*).

45. (12.) **Acræa Natalica**, Boisduval.

Acræa Natalica, Boisd., App. Voy. de Deleg. dans l'Afr. Aust., p. 590, n. 57 (1847).
Acræa Bellua, Wallengr., Lep. Rhop. Caffr., p. 22, n. 9 (1857).
Acræa Natalica, Hopff., in Peters' Reise nach Mossamb., p. 371, pl. 23, ff. 12, 13 [♂] (1862).
Acræa Hypatia, var. B., Trim., Rhop. Afr. Aust., i. p. 98 (1862).

Exp. al., 2 in. 3 lin.—3 in.

♂ *Yellow-ochreous; the hind-wing, and in a less degree the fore-wing, in the central part paler and with a creamy-pink tint; bases and hind-marginal borders black; a discal series of black spots. Fore-wing:* basal black well marked, but seldom extending as far as the middle of discoidal cell, where there is an elongate black spot; costal edge at base ochreous, but thence very thinly black to near apex; apical tip broadly black, but hind-margin from extremity of third median nervule with only a linear edging; a narrow irregularly-shaped spot at extremity of cell; a little beyond it an oblique well-marked bar of five spots, of which four are united and the fifth separated from the fourth by the third median nervule; beyond this bar, in some specimens, a more or less ill-defined dusky suffusion extending in the form of a curved transverse fascia towards posterior angle; usually a submarginal row of three inter-nervular spots between third median nervule and submedian nervure; of these, the uppermost spot is very often and the second sometimes wanting; below extremity of cell, two small spots, one above and the other below first median nervule; below median nervure a small rounded spot just on the edge of basal black. *Hind-wing:* basal black narrow, wider below median nervure; a spot in cell, just beyond basal black; a smaller indistinct spot on edge of cell a little beyond and above the last; an irregular discal row of seven small spots, often rather indistinct; a broad hind-marginal black border, without spots, with its inner edge slightly suffused; ground-colour clouded with a dull-red tint near this black border. Cilia grey. UNDER SIDE.—*Paler; the surface more shining (especially in fore-wing); hind-wing and apical region creamy-whitish, the former varied with brick-red. Fore-wing:* all the spots considerably fainter; a black spot (dotted with a white one) on costa at base, and another a little beyond it; apical black border very narrow, but emitting short black nervular rays; between these a parallel series of ochre-yellow rays; basal black merely indicated by a grey tinge. *Hind-wing:* all the spots larger and well-defined, with clear edgings of the ground-colour where the brick-red variegation approaches them; the red occupies basal, inner-marginal, and sub-hind-marginal portions, leaving disc clear; before hind-marginal border this red is in the form of broad, short internervular rays, leaving a clear line of the ground-colour between it and the border; the latter has its inner edge somewhat irregular, and emitting very short rays on nervules; it encloses seven large yellowish-white spots, and is also marked at anal angle with an elongate mark forming part of a long inner-marginal streak; at base an irregular black marking half enclosing a small white spot, a small costal spot, and a large inner-marginal one; a large one just below subcostal nervure before middle; a round spot before the central one in discoidal cell; between median nervure and inner margin a large spot followed by two smaller contiguous ones; an eighth spot in discal row, close to inner margin.

♀ *Duller, paler; without the creamy-pink tint, except rarely in hind-wing; all the spots larger and darker; basal black rather wider. Fore-wing:* apical black broader, its inner edge rather suffused. *Hind-wing: hind-marginal border very much broader,* its inner side being greatly suffused as far as discal row of spots. UNDER SIDE.—*Fore-wing:* base slightly suffused with blackish. *Hind-wing:* spots of hind-marginal border nearly always smaller than in ♂, and acute internally.

LARVA.—Light buff-yellow, with longitudinal black and white stripes. A white dorsal stripe edged with black, and a white stripe, just above legs on each side, carrying lowest row of spines. A black stripe on each side just above lateral row of spines; a broad black ventral stripe, interrupted by bases of pro-legs. On a succulent climbing plant (much affected by the *Acræinæ* generally), with small green flowers.

The above description of the larva is from notes by Mr. W. D. Gooch. The pupa is not described; but from a pencil sketch appears to be more sharply angulated on the head and thorax than that of *A. Horta.* A note as to its colours and markings is given below, from two examples received from Colonel Bowker.

This species belongs to the *Cecilia* group. It is larger and darker than any of its South-African near allies, except *A. Anemosa*, Hewits., which stands alone in its lack of discal spots, but is in habit and general colouring very near *Natalica.* The basal suffusion of the fore-wings is not half as extended as in *Stenobea*, and only in one ♀ have I found any trace of the white cloud in the hind-wings so characteristic of the same sex in the latter species.

I first met with this butterfly when landing at Port Natal for a day in August 1865, and afterwards became well acquainted with it during my visit to Natal from January to April 1867. It frequents wooded spots, and is conspicuous on the wing, flying as slowly as most of the genus.

In March 1878 Colonel Bowker sent me from Natal two living pupæ of *A. Natalica*, attached to stems of a grass. Unfortunately the butterflies endeavoured to emerge *en route* in a very small box; and thus neither pupæ nor imagines arrived in a useful condition. But the specimens sufficiently show that the pupa is quite of the type of that *A. Horta*, Linn., being creamy-white, with the limbs and position of wing-nervures outlined in black; a triple black streak from top of head along middle of back of thorax, and a broad lateral streak varied with white spots; the abdomen bearing two dorsal, two lateral, and one median ventral, chains of black rings enclosing orange-yellow spots.

From the same indefatigable observer I received, in 1879, no fewer than three pairs of this butterfly taken by him *in copulâ.*

Localities of *Acræa Natalica.*

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—Kei River (*J. H. Bowker*).
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Mapumulo. Avoca (*J. H. Bowker*). Mouth of Tugela River (*J. H. Bowker*).
  F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).
  H. Delagoa Bay.—Lorenço Marques (*J. J. Monteiro*).
  K. Transvaal.—Lydenburg and Potchefstroom Districts (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*). "Tette."—Hopffer.
    *b*1. Interior.—"Motloutsi River, Tati, and Dry River (Oates)."—Westwood. "Kilima-njaro (H. H. Johnston)."—F. D. Godman.

46. (13.) **Acræa Anemosa**, Hewitson.

♂ *Acræa Anemosa*, Hewits., Exot. Butt., iii. pl. 8, ff. 14, 15 (1865).

Exp. al., 2 in. 8–10 lin.

♂ *Ochre-yellow, in fore-wing inclining to orange, in hind-wing tinged with salmon-red; bases and borders black. Fore-wing:* basal black very distinctly defined from costa to inner margin, extending as far as origin of first median nervule; costa and hind-margin very narrowly bordered with black, apex more widely so; a black line marks disco-cellular nervules; a little beyond this a strongly marked, slightly oblique, black bar, widest on costa, and thence narrowing to an abrupt end on third median nervule; in some specimens, a small black spot just below end of bar, and another, nearer base, below second median nervule. *Hind-wing:* basal black not so wide or externally so sharply defined as in fore-wing; hind-marginal border varying in width *but always very broad,* its inner edge more or less deeply serrated by nervular projections on the salmon-red central band. Cilia black, with white inter-nervular interruptions (small in fore-wing, but large and conspicuous in hind-wing). UNDER SIDE.—Paler; markings much like those of upper side. *Fore-wing:* subapical region more or less clouded with whitish. *Hind-wing:* in basal black eight small but conspicuous white spots, viz., one basal, two costal, two in cell, and three below cell; a less conspicuous white spot just at external edge of basal black on inner margin; central bar broad, reddish-white, bordered next basal and hind-marginal black with pinkish-red; black border of hind-margin much narrower and internally more even than on upper side, containing along its middle line eight small but conspicuous inter-nervular white spots, of which the seventh and eighth are close together, between first median nervule and submedian nervure.

♀ Paler and duller. *Fore-wing:* basal black wider, emitting a projection in discoidal cell, and, in one example, another (broader) below first median nervule. *Hind-wing:* central bar very much obscured, and, in one example, externally fading into the very broad hind-marginal black. UNDER SIDE.—*Fore-wing:* projections of basal black more sharply defined. *Hind-wing:* in one example, three of the white spots in basal black wanting, viz., the outer cellular one and the two lower of those below cell.

Aberration.—? ♀ *Fore-wing: all the nervules clouded with white* near margin, especially on costa before apex. *Hind-wing:* all the red of central band *wanting* (except a little towards costa beyond middle), *being replaced by white*, which also somewhat suffuses basal black; hind-marginal black narrower than usual. UNDER SIDE.—As above, but the white somewhat more developed.

Hab.—Damaraland. (In the Hewitson Collection, British Museum.)

The description above given of the normal ♀ is made from a single Damaraland example presented to me many years ago by the late Mr. Charles J. Andersson, and from another example sent me from Delagoa Bay by Mrs. Monteiro. The special peculiarities noted are in the former specimen.

The simple but most effective colouring of this remarkable *Acræa* renders it very easy of recognition; the heavy intense black of the bases and of the outer part of the hind-wing, and the absence or great paucity of discal spots at once distinguishing it from its nearest congener, *A. Natalica*, Boisd.

First discovered on the Zambesi, *A. Anemosa* is quite a tropical species, only being known in South Africa proper as far as about 26° S., in the neighbourhood of Delagoa Bay and in Swaziland, as well as in the adjacent district of Lydenburg in the Transvaal Territory.

Localities of *Acræa Anemosa.*

I. South Africa.
  G. "Swaziland" (*E. C. Buxton*).
  H. Delagoa Bay.—Lorenço Marques (*J. G. Monteiro*).
  K. Transvaal.—Lydenburg District (*T. Ayres*). Upper Limpopo (*F. C. Selous*).

II. Other African Regions.
A. South Tropical.
a. Western Coast.—Damaraland (*C. J. Andersson* and *J. A. Bell*). "Angola (Pogge)."—Dewitz.
a 1. Interior.—Between Limpopo and Zambesi Rivers (*T. Ayres*). Khama's Country, near Bamangwato (*H. Barber*). "Victoria Falls of Zambesi and Umvungu (Oates)."—Westwood.
b. Eastern Coast.—Zambesi [Coll. W. C. Hewitson]. "Bagamoyo." —Oberthür.

47. (14.) **Acræa Acara**, Hewitson.

♂ *Acræa Acara*, Hewits., Exot. Butt., iii. pl. viii. ff. 19, 20 (1865).
♂ *Acræa caffra*, Felder., Reise d. Novara, Lep., ii. p. 369, t. xlvi. ff. 10, 11 (1865).
♂ *Acræa Zetes*, Trimen (*part*), Rhop. Afr. Aust., i. p. 99, n. 62 (1862).
♂ and ♀ *Acræa Zetes*, Var., Trim., Trans. Linn. Soc. Lond., vol. xxvi. p. 517, t. 42, ff. 8, 9 (1869).

Exp. al., (♂) 2 in. 7 lin.—3 in.; (♀) 2 in. 10 lin.—3 in. 3 lin.

♂ *Deep-red tinged with carmine; with black spots and bands. Fore-wing:* base suffused with deep-black; in discoidal cell, three black spots,—one round, touching basal black,—another elongate transversely, somewhat quadrate, a little beyond middle of cell,—the third at extremity of cell, variable in thickness, slightly curved outwards; three spots below cell, one touching median nervure, and more or less included in the basal black,—another between median nervure and its first nervule,—the third a little beyond the second, below first median nervule; a little beyond extremity of cell, a broad, oblique, black band, directed towards middle of hind-margin, and extending to second median nervule; apical portion of wing, beyond this black band, warm reddish-ochre; apex rather widely bordered with black, which narrows to a thin, hind-marginal edge on third or second median nervule, where, suddenly widening again, its inner edge is united to the extremity of the oblique band from costa, and it extends to anal angle, containing two or three spots between nervules of the apical ochre tint. *Hind-wing:* base broadly suffused with deep-black, containing a thin cellular white spot; touching the edge of which, in cell, and about median nervure, is a clouding of *white* scales, sometimes large and conspicuous; a small black spot at extremity of discoidal cell, and beyond it a more or less interrupted transverse row of six or seven rounded spots; a broad, well-defined, black band bordering hind-margin, slightly dentate on its inner edge, and sometimes containing four or five very small inter-nervular reddish spots. UNDER SIDE.—Black markings much as on upper side, *but differing much in ground-colours; surface generally glistening. Fore-wing:* pale salmon-red; black suffusion at base faint, and only present below median nervure; two black spots on costa, close to base; space between black costal stripe and black-bordered apex whitish; bordering this white *outwardly*, and continuing to submedian nervure, a row of six large, elongate, somewhat wedge-shaped, orange-ochreous spots, of which the fifth and sixth are internally bordered with black. *Hind-wing: pinkish-white;* the basal black assumes the form of an irregularly-shaped but strongly-defined black patch, containing six quadrate or triangular small white spots; costa at base rather broadly edged with salmon-red, containing a more or less conspicuous black spot; outer edge of basal patch is also clouded with salmon-red; spots in central part of wing arranged as above; two additional ones continue the transverse row to inner margin; these spots are very conspicuous from the white ground-colour they are on; hind-marginal band broad and black, containing seven or eight moderately-sized white spots; the band being bordered inwardly by a row of seven sub-triangular, brick-red spots.

♀ *Much duller, suffused with a brownish tint; the black markings not so dark, especially the basal black, which is reduced to a fuscous suffusion, often indistinct. Fore-wing:* more or less semi-transparent in middle portion; subapical ochreous paler, yellower, occasionally partly clouded with white. *Hind-wing:* any white suffusion about middle of wing rarely found; hind-marginal border considerably narrower, its inner portion indistinctly defined, so that its row of spots is usually in contact with the somewhat darker ground-colour. UNDER SIDE.—As in ♂.

The black markings in this species vary much in size, especially the oblique costal bar of the fore-wing, which is sometimes so enlarged as to be completely confluent with the streak at end of discoidal cell. In the Hewitson collection there is a small ♂ from the White Nile (mentioned in *Exot. Butt.*, iii. p. 16), which has the border of hind-wing very broad, and the white spots which it contains on the under side very small. A fine ♀ taken by Colonel Bowker on the Bashee River in Kaffraria has the basal black almost as pronounced as in the ♂; in the fore-wing the apical and hind-marginal blackish is much widened and suffused, with only indistinct traces of the ochreous spots, and the space beyond costal black bar is narrowed and yellowish-white; while in the hind-wing the hind-marginal border is even, complete, and well-defined from the ground-colour, the row of small pale spots traversing its middle line.

LARVA.—Ochreous-yellow. Each segment broadly banded transversely with purplish-red, the band occupying the middle portion. Spines long and distinctly branched, blackish, springing from tubercles situated in the purplish-red bands; the two dorsal spines on segment next head longer than the rest, erect. Head ochreous-yellow. Legs and pro-legs purplish-red.

"Feeds on *Passiflora*" (Dr. J. E. Seaman, *in litt.*)

PLATE I. fig. 1.

PUPA.—Pinkish-white. Margins of head, limbs, and wing-nervures defined with black. Abdominal rows of spots arranged as in pupæ of

A. Horta and *A. serena*, but more continuous; the spots rose-pink in wide black contiguous rings. Median line of under side of abdomen tinged with rose-pink; two spots of the same colour on median line of back of thorax, and one at base of wings. Head ochreous-yellow.

PLATE I. fig. 1*a*.

This pupa appears to be rounder and blunter anteriorly than that of *A. Horta*, and is so much more curved that the dorsal outline is strongly convex in a lateral view.

The above descriptions are made from a coloured drawing executed by the late Dr. Seaman in 1869, exhibiting a lateral view both of larva and pupa.

This very handsome and conspicuous *Acræa* is the Southern and Eastern representative of the abundant and widely-spread *A. Zetes* (Linn.) of Western Africa, and is readily distinguished by the warm red and ochreous colouring of the fore-wings, which are suffused fuscous-grey in *Zetes*.

I only once took this species on the coast of Natal, in the summer of 1867; but it is usually pretty common there, numerous specimens having been taken near D'Urban by the late Mr. M. J. M'Ken, Colonel Bowker, and others. At Pietermaritzburg, however, at the end of March and beginning of April, I found the butterfly abundant, frequenting flowers in most gardens, and as easy of capture as *A. Horta*.

The late Dr. Seaman and Colonel Bowker alike reported the larvæ as doing much damage to passion-flowers in Natal; but I have not heard what is their native food-plant.

As I have recorded in the *Transactions of the Linnean Society* (vol. xxvi. pp. 517 and 518), *A. Acara* is the subject of close mimicry by a member of the *Nymphalinæ*, described by Mr. A. G. Butler as *Pseudacræa Trimenii*. In this very interesting case each sex of the *Acræa* is distinctly copied by the corresponding sex of the *Pseudacræa*. The latter haunts the same localities as *A. Acara*, but is a rare insect.

Localities of *Acræa Acara*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban.
    b. Upper Districts.—Pietermaritzburg.
  H. Delagoa Bay.—Lorenço Marques (*J. J. Monteiro*).
  K. Transvaal.—Potchefstroom and Lydenburg Districts (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    *b*1. Interior.—"Victoria Nyanza (*Rev. J. Hannington*)."—A. G. Butler.
  B. North Tropical.
    b. Eastern Coast.—"Tongu (*A. Raffray*)."—Oberthür.
    *b*1. Interior.—"White Nile."—Hewitson.

48. (15.) **Acræa Barberi**, Trimen.

PLATE III. fig. 1 (♂), fig. 1a (♀).

Acræa Barberi, Trimen, Trans. Ent. Soc. Lond., 1881, p. 433.

Exp. al., 2 in. 5½–9½ lin. (♂); 3 in. 2 lin. (♀).

♂ *Warm brick-red, tinged with carmine; spotted and edged with black. Fore-wing:* base suffused with black, narrowly near costa, but more widely on inner margin; costa edged with fuscous very narrowly; from apex to posterior angle a broad hind-marginal fuscous border, containing seven large yellow-ochreous spots, of which the first is smallest, and the second not enclosed by fuscous on its inner edge; a large elongate spot closing discoidal cell; a similar marking in the cell not far from the extremity, and another (of variable size and rounded) in the cell near base; slightly beyond the last-named spot, and below median nervure, a curved elongate spot, and another (also below median nervure) between first and second median nervules; a spot below first median nervule, not far from posterior angle; beyond discoidal cell a subapical transverse black bar of five confluent spots, extending from costa to second median nervule, and slightly curving inwardly at its lower extremity; beyond this the ground-colour is slightly tinged with yellow-ochreous. *Hind-wing:* Base rather widely suffused with black, a disco-cellular spot being partly confluent with the suffusion; a small spot surmounted by a thin short streak at extremity of discoidal cell; an irregular transverse discal row of seven rather small spots, of which the first and sixth are nearest base; on inner margin an eighth spot is indistinctly perceptible; a moderately broad interiorly-crenelated hind-marginal black border, completely enclosing seven rather small yellow-ochreous spots. Cilia white, interrupted with fuscous at extremities of nervules. UNDER SIDE.—Markings similar; but *hind-wing and small subapical space of fore-wing pinkish-white, and ground-colour of fore-wing pale salmon-pink. Fore-wing:* Base slightly suffused with black below median nervure only; two very small black spots on costa at base, and a third (very small also) close to base in discoidal cell. *Hind-wing:* the basal black is a sharply-defined patch enclosing six white spots; an eighth and a ninth black spot continue the discal row to inner-marginal edge before middle; a regular row of seven or eight broad red lunulate marks interiorly bounding hind-marginal black border; also some red suffusion exteriorly bounding basal black; spots in hind-marginal border larger than on upper side, and conspicuously creamy white.

♀ *Semi-transparent in fore-wing; ground-colour very much duller and paler;* basal black almost obsolete; all the blackish markings smaller and much fainter, especially the hind-marginal border of hind-wing, which is all but obsolete. UNDER SIDE.—Except in the transparency of the fore-wing with its fainter spots, and duller white of the hind-wing, like that of male.

This *Acræa* stands between *A. Acara*, Hewitson, and *A. Chilo*, Godman (*Proc. Zool. Soc. Lond.*, 1880, p. 184, pl. xix. figs. 4, 5), a native of Abyssinia. It differs from the former in *its much less developed black markings* (particularly the basal black of both wings, and the subapical bar and apical border of the fore-wing), *and in the apical yellow-ochreous of the fore-wing being very much fainter.* In the female these differences are as marked as in the male, but the former is also distinguished by the remarkable transparency of the fore-wing. From *A. Chilo*, on the contrary, *A. Barberi* is in both sexes distinguishable by its stronger black markings (with the exception of the inner edge of the fuscous hind-marginal border of the fore-wing in the male and of both wings in the female, which in *A. Chilo* is unbroken near apex of fore-wing), and in the female by the much less transparency of the fore-wing. The under-side markings and colouring of *A. Barberi* agree entirely with those of *A. Acara*, except that the former are smaller.

I have named this butterfly after its discoverer, Mr. H. Barber, who captured the two males and the female here described in the Transvaal country during the year 1873. Mr. Barber collected a number of species in that region, but did not note localities further than stating that all were taken to the north of Pretoria.

To this species, I consider, should be referred two butterflies received at the South-African Museum, viz., a male taken on the Vaal River by Colonel J. H. Bowker, and a female forwarded from some part of the Transvaal by Mr. D. Arnot. These examples are clearly referable to one and the same variation, both having the apical yellow-ochreous of fore-wing more pronounced, while the interior fuscous edging of the hind-marginal border is almost obsolete. In the male this last-named character extends in a less marked degree to the hind-wing, while in the female the peculiar transparency is not noticeable, the wings being quite as opaque as in ordinary females of *A. Acara*.

Localities of *Acræa Barberi*.

I. South Africa.
  B. Cape Colony.
    c. Griqualand West.—Klipdrift [since Barkly], Vaal River (*J. H. Bowker*).—Var.
  K. Transvaal.—? Locality (*D. Arnot*). North of Pretoria (*H. Barber*).

49. (16.) Acræa Encedon (Linnæus).[1]

Papilio Encedon, Linn., Mus. Lud. Ulr. Reg., p. 244, n. 63 (1764).
Papilio Encedonia, Linn., Syst. Nat., i. 2, p. 762, n. 90 (1767).
Acræa Sganzini, Boisd., App. Voy. Deleg. dans l'Afr. Aust., p. 590 (1847).
Acræa Lycia, Fab. (var. Sganzini, Boisd.), Guér., in Lefebv. Voy. en Abyss., pl. 10, ff. 4, 5 (1849).
„ „ Doubl., Gen. Diurn. Lep., pl. 19, f. 2 (1848).
„ „ Var. A., Trim., Rhop. Afr. Aust., i. p. 103 (1862).

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[1] The satisfactory identification of this species as the rufous form of the more recent *A. Lycia*, Fab., is due to the research of Mr. P. O. C. Aurivillius, of the Royal Museum at Stockholm. See his *Recensio Critica Lepidopterorum Musei Ludovicæ Ulricæ*, &c. (in *K. Sv. Vet.-Akad. Handl.*, 1882, p. 56).

Var. A.—*Papilio H. Lycia*, Fab., Syst. Ent., p. 464, n. 94 (1775); and Ent. Syst., iii. 1, p. 176, n. 546 (1793).
Acræa Sganzini, Boisd., Faune Ent. de Mad., p. 34, pl. 6, ff. 6, 7 (1833).
Acræa Lycia, Trim., *op. cit.*, p. 102, n. 62 (1862).

Exp. al., 2 in.—2 in. 8 lin.

♂ *Dull brownish-red, inclining to ochreous-yellow* (*especially in hind-wing*), *with black spots; apical area of fore-wing dusky-blackish, crossed obliquely by a conspicuous white bar. Fore-wing:* before middle, in discoidal cell, a conspicuous transversely-elongate black spot; occasionally a much smaller ovate spot nearer base; at extremity of cell a large spot, usually indistinct from being united to blackish of apical area; below this spot a strongly-curved discal row of three good-sized spots, between second median nervule and inner margin beyond middle; near base, below median nervure, a moderate-sized spot, usually obliquely elongate, but sometimes smaller and rounded; subapical white bar broad, about equally dividing the blackish, composed of five elongate spots (the first four of which are united, the fifth smaller and separate), and extending from close to costal edge, almost to hind-margin. *Hind-wing:* a small spot at base; an obliquely-transverse row of four or five small indistinct spots near base (of which one is usually in discoidal cell); a second small spot in cell, and two small ones obliquely placed at its extremity; a discal, sinuated row of eight distinct rounded spots, from costa to inner margin; hind-margin with a narrow, dusky-blackish, unspotted border, not well defined interiorly, from which radiate short thin blackish inter-nervular lines. UNDER SIDE.—*Hind-wing and apical-hind-marginal area of fore-wing beyond white bar pale ochreous-yellow; the inter-nervular rays suffused fulvous-ochreous. Fore-wing:* ground-colour much paler; surface smooth and glistening; spots, and blackish immediately before white bar, duller and more suffused than on upper side. *Hind-wing:* spots as on upper side, but very distinctly defined.

♀ *Larger and paler than* ♂; *the black spots duller and smaller. Fore-wing:* spot below median nervure, and lowest of three discal spots, wanting or but faintly indicated.

VAR. A. (*Lycia*, Fab.) ♂ and ♀.

♂ *Ground-colour creamy-yellowish; blackish apical area of fore-wing and hind-marginal border of hind-wing much enlarged; in fore-wing, a dusky-fuscous suffusion over basal area and sometimes also over disc. Fore-wing:* blackish of apical area extending to posterior angle, and almost enclosing first and second spots of discal row. *Hind-wing:* hind-marginal border broader (usually very much broader), and more suffused interiorly; inter-nervular rays very strongly and broadly black. UNDER SIDE.—Hind-wing and apical hind-marginal area of fore-wing (beyond white bar) creamy-yellowish, brighter than on upper side; inter-nervular rays thin, well-defined, blackish with faint fulvous-ochreous scaling. *Fore-wing:* discal area whitish (except in the most dusky individuals on upper side). *Hind-wing:* hind-marginal border quite linear, not suffused.

♀ *Much paler, almost white (especially in fore-wing, which is almost transparent, and with very narrow basal and scarcely any discal fuscous suffusion).* UNDER SIDE.—As in ♂, but hind-wing and apical area of fore-wing much paler, in some specimens approaching white.

Aberr.? ♀.—Fore-wing entirely pale dull brownish-red, *wanting the apical fuscous and its white bar* (as in the *Dorippus* form of *Danais Chrysippus*, Linn.)

Hab.—Zambesi (Coll. Hewitson, 1867).

Guérin's figures (*loc. cit.*) of an Abyssinian specimen represent the fore-wing as slightly clouded with fuscous and the hind-wing as more inclining to yellow than to red; so that the individual in question, though nearer *Encedon* proper, appears to have varied a little in the direction of the *Lycia* form. The type of the latter, in the Banksian Collection of the British Museum, is a good-sized whitish ♂, with the fore-wing thickly suffused with fuscous, and is ticketed "Sierra Leone."

The Natalian ♂ s of the *Lycia* form are yellower than those usually brought from the West-African Coast. Two of the latter, in the South-African Museum, which were taken by the late D. G. Rutherford at Camaroons, are much smaller than usual, expanding only 1 in. 10 lin.

I have not been able to separate Madagascar specimens (*Sganzini*, Boisd.) from the true *Lycia*, though I find in them a tendency to confluence of some of the spots in the fore-wing (particularly the two in and at the extremity of the discoidal cell).[1] In the unusually small individual figured by Boisduval (*loc. cit.*), this tendency is carried further, and, with the partial failure of the inner part of the subapical fuscous, gives the look of a distinct form.

A. Encedon has no very near allies, but presents points of affinity to *A. Petræa*, Boisd., in one direction, and to *A. Rahira*, Boisd., and *A. Anacreon*, Trim., in another. It may at once be known from all its South-African congeners as the only *Acræa* with a white subapical bar of the fore-wing in both sexes.

This very well-known and widely-ranging species is abundant on the coast of Natal, chiefly frequenting wooded places, and is also met with inland as far as Pietermaritzburg, where I found it in 1867. The pale variety seemed as common as the rufous type-form, and I took numerous examples of both sexes at D'Urban, Verulam, and Pietermaritzburg. The paired sexes of *Encedon* (typical) were sent to me from D'Urban by Colonel Bowker in 1878. The same gentleman, in 1879, forwarded me two males, one of the typical and the other of the pale form, which had been taken at Fort Chelmsford, while fighting together on the ground with great pertinacity, by Captain H. C. Harford of the 99th Regiment. The typical *Encedon* is also known to me to occur at King William's Town in the Cape Colony, at Delagoa Bay, and in Damaraland; while Aurivillius (*loc. cit.*) notes its inhabiting Guinea in company with the *Lycia* form.

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[1] These two spots are united by a fuscous ray in three Natalian examples, one of the rufous and two of the *Lycia* form.

Localities of *Acræa Encedon.*

- I. South Africa.
  - B. Cape Colony.
    - *b.* Eastern Districts.—King William's Town (*J. H. Bowker*).
  - D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  - E. Natal.
    - *a.* Coast Districts.—D'Urban. Verulam. Mapumulo.
    - *b.* Upper Districts.—Pietermaritzburg.
  - F. Zululand.—St. Lucia Bay (*H. Tower*).
  - H. Delagoa Bay.—Lorenço Marques (*J. J. Monteiro* and *J. H. Bowker*).
  - K. Transvaal.—"Southern Part (*N. Person*)."—Wallengren. Upper Limpopo (*F. C. Selous*).
- II. Other African Regions.
  - A. South Tropical.
    - *a.* Western Coast.—Damaraland (*J. A. Bell*). "Angola (*J. J. Monteiro*)."—Druce. "Kinsembo, Congo (*H. Ansell*)."—Butler. "Chinchoxo (*Falkenstein*)."—Dewitz.
    - *b.* Eastern Coast.
    - *bb.* Madagascar (*Caldwell*).
  - B. North Tropical.
    - *a.* Western Coast.—Sierra Leone.—Coll. Brit. Mus., &c.
    - *b.* Eastern Coast.—"Abyssinia (*Lefebvre*)."—Guérin-Meneville.
    - *b1.* Interior.—White Nile. Upper Egypt.

50. (17.) **Acræa Rahira**, Boisduval.

♂ *Acræa Rahira*, Boisd., Faune Ent. de Madag., &c., p. 33, pl. 5, ff. 4, 5 (1833); and App. Voy. de Deleg. dans l'Afr. Aust., p. 590 (1847).
♂ ♀ „ „ Trim., Rhop. Afr. Aust., i. p. 103, n. 65 (1862).

Exp. al., 1 in. 8 lin.—2 in. 3 lin.

♂ *Warm yellow-ochreous, with a rufous tinge, spotted with black. Fore-wing:* a small ovate or reniform spot in discoidal cell, a little beyond its middle; a larger, irregular-shaped spot at extremity of cell; costa edged with blackish, widest at apex; beyond extremity of discoidal cell, an oblique transverse row of four spots, from just below costa to second median nervule, not far from hind-margin; two black spots, one above and the other below first median nervule, lying nearer to base than the row of four spots; on hind-margin, nervules *strongly clouded with blackish*, which, narrowing inwardly, forms sharp, distinct rays, deeply piercing the ground-colour; base narrowly blackish. *Hind-wing:* lower portion of base clouded with blackish; two transverse rows of spots,—one, before middle, of few spots, irregular and interrupted,—the other, commencing about middle of costa, and extending to about middle of inner margin, is rather sinuous, and angulated on radial nervule, from whence to inner margin it proceeds in a direct line, containing eight spots in all; parallel to the row last mentioned, a more or less distinct grey streak, from just before anal angle, on inner margin, as far as radial nervule; on hind-margin, nervules clouded with blackish, forming a narrow border, dentate inwardly, but not forming nearly such sharp and deep indentations on the ground-colour as in *fore-wing.* UNDER SIDE.—*Fore-wing: paler* than on upper side; base with a black spot, but not clouded with blackish; spots as on upper side, but rather smaller and not so black; apical portion, beyond transverse row of four spots, pale whitish-yellow, with orange-ochreous rays between the nervules, which are narrowly clouded with black; a narrow yellowish edging along costa. *Hind-wing: pale whitish-yellow;* two or three additional small black spots near base; transverse rows of spots as on *upper side;* base, inner margin as far as outer row, and internal edge of straight portion of the latter row of spots, clouded with reddish-ochreous between nervules; space between outer row and parallel streak from inner margin wholly spotless, forming a conspicuous pale band, in consequence of there being elongate reddish-ochreous marks all along hind-margin beyond streak between the nervules, which are narrowly black clouded.

♀ *Duller, varying from pale yellow-ochreous tinged with brown to pale dusky-grey;* but similar in marking. *Fore-wing:* an additional, more or less observable, small, thin, black spot, below median nervure, not far from base; other spots as in ♂, but larger and fainter; a paler space of colour sometimes tinged with whitish beyond transverse row from costa; blackish clouding on nervules not nearly so strong or clearly-defined as in ♂, being much suffused. *Hind-wing:* quite like ♂'s, excepting that the hind-marginal clouding is duller. UNDER SIDE.—Universally paler. *Fore-wing:* ochreous inter-nervular rays fainter. *Hind-wing:* hind-marginal inter-nervular markings ill-defined, the three next costa obsolete; fuscous streak wider than in ♂.

In the greyest ♀s there is but a faint tinge of yellow-ochreous in the fore-wing, while its apical area and the whole field of the hind-wing have a greenish tinge with the reddish-ochreous markings almost obliterated.

A rather dull-coloured female sent from the Tsomo River, Kaffraria, by Colonel Bowker, is remarkable for the enlargement and partial confluence of the spots on the upper side of the fore-wing; the spot in discoidal cell being united by a long ray to the spot at the end of the cell, and the latter spot again being united by a similar ray to the third spot of the oblique subapical bar; the discal dark streak on the under side of the hind-wing is also enlarged and suffused externally. A ♂ taken by Mr. J. M. Hutchinson at Estcourt, Natal, has the dark borders and spots of the upper side all much enlarged but normal otherwise.

A. Rahira is a very distinct species, its only ally in South-Africa being *A. Anacreon*, Trim., readily recognised by the maculated hind-marginal border of the hind-wings. It is, however, closely related to *A. Zitja*, Boisd., of Madagascar, but the latter is of a deep fulvous-ochreous, with the dark borders only very slightly radiating on nervules in the fore-wing, and not at all in the hind-wing; while the ground-colour of the under side of hind-wing is uniformly dull creamy-fulvous, with a whitish band immediately succeeding discal row of spots, and a narrow, dentated, whitish hind-marginal edging.

This species is local in its haunts, being almost confined to marshy or swampy spots, but is usually in great abundance where it occurs. Early in February 1859 it was on the wing in amazing numbers in the marshes bordering the Bitouw River at Plettenberg Bay on the southern coast of the Cape Colony. It is in such damp places that the food-plant of its larva, a species of *Polygonum* (? *P. tomentosum*), flourishes; and I learn from Mrs. Barber, who discovered them, that the larvæ abound on the plant in question, and that their colouring resembles the pink and bronzy hues of the inflorescence. The butterfly has a slow flight, with a whirring action of the wings, and a tendency to a circular direction; it always keeps near the ground, and settles very frequently on low flowers. I believe that there are two broods in the year, as I have found them numerously from the end of October to the middle or nearly the end of November, and again from the middle of January to the middle of March, but not in the intervening period.

Localities of *Acræa Rahira.*

I. South Africa.
  B. Cape Colony.
    a Western Districts.—Caledon (Steenbrass River), and Riversdale (Zoetmelk River).—Burchell Coll. in Mus. Hope, Oxon.—Swellendam (*L. Taats*). Knysna. Plettenberg Bay. Oudtshoorn (— *Adams*).
    b. Eastern Districts.—Grahamstown. East London (*P. Borcherds*).
  D. Kaffraria Proper.—Butterworth, Bashee River, and Tsomo River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban. Mapumulo.
    b. Upper Districts.—Udland's Mission Station. Greytown. Little Noodsberg. Estcourt (*J. M. Hutchinson*). Colenso (*W. Morant*).
  K. Transvaal.—Potchefstroom (*W. Morant* and *T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola (*J. G. Monteiro*)."—Druce.

51. (18.) **Acræa Anacreon,** Trimen.

Acræa Anacreon, Trim., Trans. Ent. Soc. Lond., 1868, p. 77, pl. vi. ff. 3, 5, (♂) and 4 (♀); and 1870, p. 347.

Exp. al., 1 in. 8 lin.—2 in. 7 lin.

♂ *Fulvous-ochreous; each wing with a discal transverse row of black spots, and a black hind-marginal border marked with spots of the ground-colour. Fore-wing:* a conspicuous rounded black spot in discoidal cell, near extremity; another spot, narrower and more oblique, on disco-cellular nervules; seven spots in irregular discal row, of which the fifth and sixth are largest, the first (near costa) usually indistinct, and the seventh (on inner margin beyond middle) often wanting; costa edged with black, which widens into a broad apical and hind-marginal border containing seven spots of the ground-colour; this border gradually narrowing to a thin edging at posterior angle, its inner edge radiating on the nervules, but leaving the last two spots confluent with the discal ground-colour; between upper spots of discal row and hind-margin some more or less distinct whitish scaling; base narrowly clouded with black, which emits a ray along inner margin. *Hind-wing:* no black spot on disco-cellular nervule, but one in cell near extremity; before middle a spot between costal and subcostal nervures; seven spots in irregular discal row, the last two of which are the largest; hind-marginal border moderately broad, somewhat narrower towards anal angle, more or less radiating inwardly on nervules, and enclosing eight sublunulate spots rather paler than the ground-colour or (sometimes) whitish-yellow; basal black rather deeply piercing cell and extending widely below median nervure to rather beyond origin of first nervule; inner margin beyond middle tinged with whitish-yellow in those specimens in which the hind-marginal spots are of that hue. UNDER SIDE.—*Hind-wing and costal edging and apical area of fore-wing whitish-yellow;* nervules strongly clouded with black near margin. *Fore-wing:* spots as on upper side; along hind-margin, between apex and first median nervule, a series of more or less conspicuous inter-nervular short fulvous rays. *Hind-wing:* spots as on upper side, but larger, those of discal row often contiguous; below median nervure a transverse stripe of three contiguous spots extends to inner margin, almost touching the eighth (additional) spot of discal row; base marked with two rather large *pink* spots, edged with black; immediately before discal spots a row of pink spots, indistinct or obsolete near costa, but large and conspicuous towards inner margin; spots of hind-marginal border whitish-yellow, and so much larger than on upper side as to reduce the black to a linear external and narrow internal edging; before the border some very faint inter-nervular fulvous rays. In both wings the basal black is wanting, but the costa near base is marked with a small distinct black spot.

♀ *Semi-transparent greyish-ochreous; the hind-wing more or less tinged with pale fulvous;* an indistinct yellowish-white oblique bar outwardly bounding three upper spots of discal row; black of hind-marginal borders duller, rather broader. *Fore-wing:* occasionally a minute elongate spot before middle, below median nervure. *Hind-wing:* sometimes a minute spot on disco-cellular nervule. UNDER SIDE.—Yellowish colouring paler; inter-nervular rays obsolete, or nearly so; pink markings of hind-wing duller, especially discal ones, which are sometimes obsolete.

VAR. A. (♂ and ♀).—*Both wings (but especially fore-wing) much* *elongated;* colouring and markings normal, except that all the black spots are lengthened and attenuated.

Hab.—Natal (Maritzburg, Greytown, and Udland's Mission Station).

The ♂s from Basutoland and the sources of the Umzimvubu are much paler and smaller than those from Natal; diminished size is also very noteworthy in the ♀s from the same districts. In these ♂s, and also in one from the southern border of Kaffraria Proper, the whitish scaling before the apex of fore-wings exhibits an approach to the oblique indistinct bar possessed by the ♀.

A ♀ taken near Estcourt, Natal, by Mr. J. M. Hutchinson, presents the peculiarity of *hind-wings* of the same warm fulvous tint that characterises the ♂.

This very distinct species has no known near ally; its appearance, however, approximates it to *A. Rahira*, Boisd. From the latter it is distinguished readily, not only by the bright fulvous colouring of the ♂ and the greater transparency of the ♀, but by the possession of a *spotted hind-marginal border.* This last-named character is also presented by *A. Buxtoni*, Butl., but the small size of that species, and its want of any discal spots in the fore-wings, preclude the possibility of confusing it with *Anacreon.*

In April 1865 two ♂ specimens, taken on the bank of a small river called the Sogana, were received by me from Colonel Bowker, and these Kaffrarian examples were the only ones I had seen until March 1867, when I found the species pretty commonly in the Umvoti District of Natal, particularly near Greytown and about the Noodsberg. Like *A. Rahira,* this butterfly delights in damp, reedy spots, and has a very weak low flight. It frequently settles on flowers, and the ♀s may easily be taken with the fingers. I met with *Rahira* in the same district, and often in the same spots; the two species, where they occurred together, being equally numerous.

Localities of *Acræa Anacreon.*

I. South Africa.
  B. Cape Colony.
    d. Basutoland.—Heads of the Orange River (*J. H. Bowker*).
  D. Kaffraria Proper.—Sogana River (*J. H. Bowker*). Heads of the Umzimvubu (*J. H. Bowker*).
  E. Natal.
    b. Upper Districts.—Great Noodsberg. Greytown. Estcourt (*J. M. Hutchinson*). Maritzburg (Colonel S. Scott).
  K. Transvaal.—Lydenburg District (*T. Ayres*).

52. (19.) **Acræa Buxtoni**, Butl.

Acræa Serena (Fab.), Boisd., App. Voy. de Deleg., p. 590 (1847).
Acræa Manjaca (Boisd.), Wallgrn., Lep. Rhop. Caffr., p. 22 (1857).
Acræa Serena (Fab.), *pars*, Trimen, Rhop. Afr. Aust., i. p. 107, n. 67 (1862).
Acræa Buxtoni, Butl., Ann. and Mag. Nat. Hist. (4), xvi. p. 395 (1875).

Exp. al., 1 in. 7 lin.—2 in.

♂ *Bright fulvous-ochreous, with narrow blackish borders and a few black spots. Fore-wing:* base very faintly and narrowly blackish; costa with a narrow blackish border, wider about middle; about middle of discoidal cell, sometimes touching costal border, a small rounded spot; at extremity of cell a short, broad, oblique, curved black bar, generally ending abruptly on third median nervule, but rarely partly prolonged towards hind-margin by a small elongate mark below that nervule; apical border rather broad; hind-marginal border narrower, its inner edge emitting irregularly short thin nervular rays, and one inter-nervular projection between second and third median nervules; enclosed in border, from apex to posterior angle, eight inter-nervular spots of the ground-colour (of which the upper four are more linear than the lower), sometimes very distinct, but oftener obscured or wanting near apex. *Hind-wing:* base a little more widely blackish than in fore-wing; a well-marked, slightly curved, sub-linear spot at upper part of extremity of discoidal cell; basal and discal spots of under side faintly showing; hind-marginal border much like that of fore-wing, but containing seven spots, which are seldom very distinct, and sometimes almost obliterated. UNDER SIDE.—*Hind-wing and apical area of fore-wing pale creamy-yellowish*, the nervules clouded with black towards margin, which is bounded by a black line. *Fore-wing:* ground-colour much paler, especially towards posterior angle; costal border mostly creamy-yellowish; oblique bar not so strongly marked; along hind-margin a row of short inter-nervular ochreous rays. *Hind-wing:* the following small black spots, viz., two at base, one on costa close to base, one close to costa before middle, two in discoidal cell, one at extremity of cell, one just below median nervure, and two close to inner margin near base; about middle an angulated discal row of eight spots from costa to inner margin; a sharply-festooned black line, before hind-marginal one, but meeting it on each nervule, separates from disc seven large, inwardly-narrowed spots of the ground-colour.

♀ (Form *a.*)—*Paler, duller; hind-marginal borders considerably broader, all their enclosed spots large and distinct. Fore-wing:* oblique bar narrower, more curved; inward projection of hind-marginal border between second and third median nervules much greater. UNDER SIDE.—As in ♂.

♀ (Form *b.*)—*Fore-wing: semi-transparent grey*, basally tinged with more or less fulvous-ochreous; *oblique bar much reduced or almost obsolete; the space immediately beyond it more or less whitish* (*this whitish is usually vaguely and narrowly prolonged to posterior angle*); hind-marginal border and its spots more or less suffused and indistinct. *Hind-wing:* several of the discal and basal spots of under side well pronounced but rather suffused; usually some dull grey irroration in basal area. UNDER SIDE.—*Hind-wing:* before the festooned line which encloses hind-marginal spots, a similar (but not parallel) less pronounced festooned line, so that the two lines seclude between them an inner series of small spots of the ground-colour, each spot divided by a black-clouded nervule.

This is the southern form of *A. Serena*, Fab., and perhaps not sufficiently distinct to rank as a separate species, either from it or from *A. Manjaca, Boisd.*, the Madagascar representative. From the West-African insect, *A. Buxtoni* is in both sexes to be distinguished by the shortness and incompleteness of the oblique subapical black bar of the fore-wing, which in *Serena* is almost invariably broader and united to the hind-marginal black border. In the ♀ this distinction is very marked, particularly in the "Form *b*" (upon which Mr. Butler chiefly characterised *Buxtoni*), in which the subapical white—a strictly limited and enclosed bar in *Serena*—is diffusedly extended in the outer discal region. In Natal this peculiar form of ♀ is more prevalent than that which nearly resembles the ♂. In the ♂ *Serena* the hind-marginal border is broader than in the ♂ *Buxtoni*, and the enclosed spots larger, and almost invariably very well defined; while in both sexes the inner festooned line on the under side of hind-wing, described above as peculiar to "Form *b*" of ♀ *Buxtoni*, appears to be always present.

Judging from Boisduval's figures (*op. cit.*), *A. Manjaca* would appear to be even nearer to *Buxtoni* than *Serena* is, the subapical bar in the ♂, though complete, being very slender, and in the ♀ quite as imperfect as in the "Form *b*" above described. The ♀ figured by Boisduval seems, indeed, very close to the latter, the fore-wing being even more transparent and almost colourless. Both sexes are represented as smaller than either the West-African or South-African form.

LARVA.—Dull green. A whitish stripe along each side of the back, interrupted on each segmental incision by a transverse line darker than the ground-colour. Spines of the dorsal and upper lateral rows black; of the lower lateral row on each side yellow. The two dorsal black spines on segment next head longer and more distinctly branched than the rest, and projecting forward beyond the head, which is ochreous.

(Described from a drawing by Mr. H. C. Harford, giving a dorsal view.)

The food-plant is stated to be a species of *Hermannia*.

PUPA.—Pale-yellowish. Outline of wings and nervures very finely black; some thin and ill-defined dorso-thoracic black marks; on each side of abdomen a subdorsal and a lateral row of yellow spots in black rings, the latter being thinner in the lateral than in the subdorsal row. Attached to a slender stalk.

(Described from a figure by Mr. H. C. Harford, giving a lateral view.)

A. Buxtoni is a common species on the coasts of Natal, where I observed it from January to April 1867. Going inland it became scarcer; but I met with occasional individuals as far as Greytown. It is a very weak flyer, even for an *Acræa*, and is most easily captured. The outskirts of woods are its favourite haunt. I once met with two ordinary males and a dark specimen of the ♀ "Form *b*" flitting about together in the same spot. Colonel Bowker sent me in June 1879 a remarkably dark female of this form, captured by him near D'Urban. In this example the fore-wings are almost uniformly ashy-grey, with the apex darker; the subapical whitish forms a defined narrow bar, and only two ochreous spots are traceable on hind-margin. The hind-marginal border of the hind-wings has only the faintest indications of spots.

Localities of *Acræa Buxtoni*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Mapumulo. Mouth of Tugela River (*J. H. Bowker*).
    b. Upper Districts.—Greytown. Pietermaritzburg (*Miss Colenso*).
  F. Zululand.—St. Lucia Bay (*H. Tower*).
  G. "Swaziland."—F. E. C. Buxton.
  H. Delagoa Bay.—Lorenço Marques (*J. J. Monteiro* and *J. H. Bowker*).

53. (20.) **Acræa Cabira**, Hopff.

Acræa Cabira, Hopff., Monatsber. d. K. Preuss. Acad. d. Wissensch., 1855, p. 640, n. 7; and Peters' Reise nach Mossamb., Ins., p. 378, pl. xxiii. ff. 14, 15 [♂] (1862).
Acræa Cynthia, Trim. [part], Rhop. Afr. Aust., i. p. 108, n. 68 (1862).

Exp. al., (♂) 1 in. 7½–10 lin.; (♀) 2 in. 2–5 lin.

♂ *Blackish-brown, with pale yellow-ochreous bands. Fore-wing:* a narrow subapical oblique band, of somewhat irregular outline, extending from first subcostal nervule to third median nervule at some distance from hind-margin; a very irregularly-shaped medio-discal broad patch or short band, of which the upper part just enters discoidal cell, the inner side projects towards base just below median nervure, the outer edge is deeply indented on first median nervule, and the lowest part (on inner margin) very much narrowed; subcostal and median nervures red near base, the former more brightly, but the latter to a greater length. *Hind-wing:* a broad median transverse band, paler and narrowed both on costa and inner margin, its inner edge irregularly indented by some black spots indistinct on the ground-colour, its outer edge slightly indented on nervules and much produced outwardly between first subcostal and third median nervules, below which the band is abruptly narrowed; in basal area two parallel transverse rows of black spots. UNDER SIDE.—Bands as above, but very much paler, and the outer and lower edge of the subapical bar of fore-wing ill-defined. *Fore-wing:* a dull-red suffusion covering basal area, extending to end of discoidal cell and to inner edge of disco-median patch, and marked in both places with a dark streak; costa narrowly edged with pale-yellowish; apical space beyond oblique bar, and hind-marginal border below it, pale-yellowish crossed by black nervules, and by a series of inter-nervular, broad, hastate, fulvous markings, narrowly black-edged on each side. *Hind-wing:* costa at base tinged with dull-red, and marked with two small black spots; a third small black spot at base, below median nervure; basal ground-colour pale-yellowish; near base a double row of black spots (enclosing an interrupted dull-red band, widest near costa), composed of four in inner row and five in outer row; the latter bound the inner edge of median band, while the outer edge is more regularly indented on the nervules than on upper side; beyond median band the whole of the broad hind-marginal border is marked as in fore-wing, but more vividly, and the outer extremities of the hastate fulvous inter-nervular rays are of the same pale-yellow as that of median band.

♀ Similar, but rather duller and paler. *Fore-wing:* subcostal and median nervures more broadly red, sometimes conspicuously so; disco-median patch more narrowed inferiorly, scarcely passing submedian nervure and not reaching inner margin. *Hind-wing:* median band less prominent externally in upper portion; on hind-margin often a row of six or seven usually ill-defined fulvous or fulvous-yellowish inter-nervular spots. UNDER SIDE.—As in ♂.

VAR. A.—Only subapical bar of fore-wing pale yellow; *the disco-median patch of fore-wing and the band of hind-wing dull-fulvous;* the former of these two latter markings emitting a ray towards base.

Hab.—Zambesi (Hewitson Collection).

LARVA.—Bluish-green with yellow-ochreous longitudinal lines and transverse bands. Head and segments two, three, and four, yellowish-brown. Longitudinal lines three, a dorsal and two subdorsal ones. From the transverse band on each segment arise the spines, which are rigid and of moderate length, black on the second, twelfth, and thirteenth segments, yellow-ochreous on the rest. The band is marked on each side with a bluish-green subdorsal spot and a black spiracular ring.

Feeds on a woolly, fleshy-leaved weed like a *Lamium*, common in clearings.

PUPA.—Whitish-green, with the usual pattern of the markings slightly marked, the dorsal markings more pronounced than the others.

Mr. W. D. Gooch, from whose pencil sketches and notes the above descriptions are made, states that these larvæ are very abundant near Springvale, on the Natal Coast, and that there are three broods in the year. They are gregarious, and when young fasten leaves together with silk, feeding on the under side of the leaves. The pupal state usually lasts during ten days, but sometimes only seven days.

This species, founded by Hopffer on a single ♂ example from Inhambane, is allied to *Bonasia*, Fab.,[1] and *Cynthius*, Drury, but more closely to the former. From *Bonasia* it may be known by all the bands being yellow instead of fulvous, and of different shape; the subapical bar of the fore-wing being less curved, the disco-median patch not united to base by a longitudinal ray, nor extending with even width to inner margin, and the median band of the hind-wing regularly indented outwardly and much widened towards its upper portion. On the under side, too, *Cabira* has only the basal part of fore-wing, and not the disco-median patch, fulvous; while the marginal border is much broader, and presents fulvous inter-nervular rays, which in *Bonasia* are black. The Zambesi variety above noted makes a decided approach, however, to *Bonasia* in the points of having two of the bands fulvous, and of one of those (in the fore-wing) emitting a fulvous ray towards the base.

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[1] I have examined the Fabrician type-specimen in the Banksian Collection in the British Museum, and find that Cramer's *Eponina* ♂ (*Pap. Exot.*, t. cclxviii. ff. A, B) quite agrees with it. The butterfly given by Cramer (*l. c.* ff. C, D) as *Eponina* ♀ (see text of vol. iii. p. 138) is evidently a distinct species, being indeed the ♀ *Serena*, Fab. In both cases the Fabrician names have priority.

The *Cynthius* of Drury is a rather larger insect than *Cabira*, and its bands are narrower, straighter, and more even throughout; while the hind-wing has a row of fulvous spots midway between the median band and the hind-margin. On the under side the marginal borders are broad, but present no fulvous rays in either wing; and in the hind-wing the basal black spots are more numerous.

A. Cabira is a very handsome species, and very different in appearance from any of its South-African congeners. The well-defined, clear, pale-yellow bands on the dark-brown ground of the upper side, and the elaborate vandyked border of the under side, render it most easily recognised.

Though constantly to be met with on the coast of Natal, this *Acræa* was less numerous than most of its congeners in the summer of 1867; and I only found it in the vicinity of D'Urban and Verulam. I have not seen any examples from the upper districts of Natal, or from farther in the interior. It frequents woods and their outskirts, seldom appearing in open ground, and flies slowly, not far above the herbage, often settling on low flowers. It appears in the winter as well as in the summer, for I took a specimen at D'Urban in June 1865, and Colonel Bowker captured several in August 1879.

Localities of *Acræa Cabira*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Avoca (*J. H. Bowker*).
  F. "Zululand (*A. Delegorgue*)."—Boisduval.
  I. "Inhambane."—Hopffer.

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—Zambesi (Rev. H. Rowley).—Coll. Hope, Oxon.

GENUS PLANEMA.

Planema (Section ii. of *Acræa*, Fab.), Doubl., Gen. Diurn. Lep., i. p. 140 (1848).

Acræa (part), Trimen, Rhop. Afr. Aust., i. pp. 92, 110–111 (1862).

IMAGO.—*Head* smaller than in *Acræa; palpi* with the second joint very slightly or not at all swollen, and the terminal joint, though very short, better developed.

Fore-wings more or less apically produced, especially in ♂; first subcostal nervule emitted before end of discoidal cell in the *Esebria* and *Lycoa* group, but at or beyond end of cell in *Euryta* and *Gea* group. *Hind-wings* with discoidal cell shorter; in *Euryta* group exceedingly short.

Abdomen more slender, longer; in *Euryta* group sometimes longer than the hind-wings.

LARVA.—Like that of *Acræa*, but with longer spines.

PUPA.—Like that of *Acræa,* but with back of abdomen armed with several pairs of pointed tubercles or long filaments; the head and back of thorax also tuberculated in some species.

This genus has a very distinct facies, owing to the blackish or dusky-brown ground-colour of the wings, plainly banded with rufous, yellowish, or white, and the length of the fore-wings and abdomen. The palpi are in nearly all cases black, streaked with white, instead of yellow, as in *Acræa;* and the long abdomen has in both sexes the incisions of the segments superiorly, a row of large spots on each side, and the inferior surface generally, ochre-yellow.

The point of origin of the first subcostal nervure of the fore-wings, used by Doubleday to distinguish the two groups represented by *Lycoa* and *Gea*, is an unstable character in *Planema,* for while in the *Lycoa* group it seems constantly to be before the end of the discoidal cell (as in *Acræa*), it is just at the end of the cell in the ♂ s of *P. Euryta* and *Aganice*, but beyond it in the ♀ s of those species as well as in both sexes of *P. Gea.*

Planema is a thoroughly tropical and sylvan genus of *Acræinæ*, strongly characteristic of Western Africa, whence about twenty closely-allied species have been recorded. The males usually present yellowish or rufous bands, and the females broader white ones, but the latter occasionally present both white and coloured markings, and in some cases the bands are white in both sexes.

The *Planemæ* are, even more than the *Acrææ*, the objects of the closest "mimicry" by *Nymphalinæ* of the genera *Pseudacræa* and *Elymnias*, and one, the ♀ of *P. Gea* (Fab.), is also faithfully imitated by the ♀ of *Papilio Cynorta*, Fab. The *Pseudacrææ* present some of the most thoroughly deceptive mimicries known, their imitation extending to both sexes, however different in colouring these may be, and following every variation in the models, however slight.

Only two South-African species are known, *P. Esebria*, Hewits., belonging to the *Lycoa* group, and *P. Aganice*, Hewits., belonging to the *Euryta* group. Both are natives of Natal, but while the former extends as far south-westward as King William's Town, the latter is not known to range beyond the Igora River in Kaffraria Proper. They frequent wooded places, and fly higher at times than any of the species of *Acrææ* that I have seen on the wing.

54. (1.) Planema Esebria, (Hewitson).

♂ and ♀ var. *Acræa Esebria*, Hewits., Exot. Butt., ii. pl. 20, ff. 11, 12 (1861).
Acræa Protea, Trim., Rhop. Afr. Aust., i. p. 110, n. 70 (1862); and pl. 3, f. 2 [var. ♀] (1866).
? *Acræa Cydonia*,[1] Ward., "Ent. M. Mag., x. p. 59 (1873)."

Exp. al., (♂) 2 in. 1–4½ lin.; (♀) 2 in. 4½ lin.—3 in.

♂ *Blackish-brown; a broad ochre-red patch occupying all hind-wing* except a wide hind-marginal border *and the greater part of inner-marginal portion of fore-wing; an oblique pale-yellow bar in fore-wing*, a little beyond extremity of discoidal cell. *Fore-wing:* oblique bar rather narrow, divided into five spots, of which the first (near costa) is small and sublinear, and the last (below third median nervule) small, squarish, out of line with the rest, often indistinct, and sometimes obsolete; red patch occupying all inner margin except near base and at posterior angle, rising as far as median nervure, and sometimes encroaching on discoidal cell; subcostal and median nervures more or less clouded with red from base to about middle. *Hind-wing:* only a very small and faint dusky suffusion at base, near which are indistinctly visible five or six very small black spots; hind-marginal border emits strong fuscous rays piercing red field between the nervules. UNDER SIDE.—*Hind-wing and apical portion, with costal and hind-marginal border of fore-wing, dull pale-brownish with a tinge of yellow, crossed by thin fuscous inter-nervular rays. Fore-wing:* subapical bar paler, almost white; inner marginal patch much paler, only faintly reddish; inter-nervular rays extend from hind-margin as far as outer edge of subapical bar. *Hind-wing:* at base two small black spots, one above, the other below origin of median nervure; near base the following small black spots, viz., one above costal nervure, two below it (the outer of which is farthest from base of all the spots), two close together in cell, two more widely apart below median nervure, two below submedian nervure, two below internal nervure; middle area paler than rest of wing and with a slight reddish tinge; inter-nervular rays well marked, extending almost to origins of nervules; between first median nervule and submedian nervure two rays.

♀ *Similar to ♂; but subapical oblique bar of fore-wing pure white, and red colouring darker, less tinged with ochreous. Fore-wing:* subapical bar broader, more even, its last spot larger, well marked, and incorporate with the bar; occasionally a small elongate white mark below extremity of bar, between second and first median nervules;

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[1] I refer with doubt to Mr. Ward's insect (not having seen his specimens or description), because in the very fine collection of Mr. Godman, F.R.S., I noted unquestionable examples of the rufous form of *Esebria* named *Cydonia*, Ward, and understood from that gentleman that they had been determined by Mr. Druce, well known as a good lepidopterist. If this identification prove accurate, the range of *P. Esebria* will have to be extended to the Camaroon Mountains, Western Africa, the *habitat* of *Cydonia*, Ward.

subcostal nervure more strongly clouded with red. UNDER SIDE.—As in ♂; but subapical bar of fore-wing pure white, rather wider than on upper side (its edges somewhat suffused), occasionally less distinctly prolonged as far as first median nervule.

In a ♂ captured by Colonel Bowker at Inchanga, Natal, the subapical bar of the fore-wing is of the same ochre-red as the rest of the markings on the upper side.

The red of the hind-wings is in both sexes variable in extent, sometimes extending to hind-margin near anal angle, and in the ♀ occasionally covering all the wing, except some narrow fuscous clouding towards apex.

Var. A. (♂ and ♀).

♂ *Red of both wings replaced by the same pale-yellow as that of subapical bar of fore-wing. Fore-wing:* inner-marginal patch much smaller, only occupying middle portion of inner margin, and rarely rising above first median nervule. *Hind-wing:* basal blackish much more developed, sometimes quite broad; hind-marginal border constantly wider and more even throughout. UNDER SIDE.—*Fore-wing:* inner-marginal patch and subapical bar pale-yellowish. *Hind-wing:* basal spots larger, rounder; central area occupied by a broad, ill-defined, dusky-yellowish band; base tinged with brownish-ochreous.

♀ *Like ♂, but subapical bar of fore-wing (and sometimes all the broad markings) pure white. Fore-wing:* inner-marginal patch smaller, its edges suffused.

It is the ♀ of this variety which is figured by Hewitson (*l. c.*, fig. 12) as that of the red-marked ♂; but (as described above) there is a red-marked ♀, which much more closely agrees with his type of the ♂, and which is figured as "Var. B." in my work above quoted.

In a few aberrant examples (♂ and three ♀s) of this variety the markings are reduced in size, the inner-marginal patch of the fore-wing especially being almost obsolete. In the ♂ the markings are almost, and in the ♀s quite white. In both sexes, on the under side of the hind-wing there is a faintly indicated row of four inter-nervular fuscous dots just beyond discoidal cell. (These examples are respectively from King William's Town, the Coast of Natal, and St. Lucia Bay.)

LARVA.—About 1¼ inches long. Pale ochreous-brown; each segment (except head and segment next to it) banded transversely and centrally with a black streak edged on both sides with a pale-yellow streak. A lateral stripe of the same pale-yellow. Head black. Second, twelfth, and thirteenth segments each with two black spines; third and fourth segments each with two pairs of black spines; each of the remaining segments with four black spines springing from central black streak, and two lateral pale-yellow spines. On a species of *Fleurya*, in February and March.

PLATE I. fig. 2.

PUPA.—About $\frac{3}{4}$ inch long. Chalky-white, with a faint yellowish tinge. A series of very fine linear black markings along dorso-thoracic ridge. Antennæ and wing-nervures faintly indicated by delicate linear black markings. Five rows of abdominal black spots, viz., two dorsal, two lateral, and one ventral; these markings are sometimes slightly tinged with orange, and *the dorsal ones on the first three segments of the abdomen are conspicuously orange, black-edged, tubercular, and pointed.* At anal extremity three looped black marks. Head very slightly bifid. Thorax prominently angulated at bases of wing-covers, and with a pair of smaller projections posteriorly. Duration of pupal state eight days.

PLATE I. fig. 2*a*.

Mr. J. P. Mansel Weale, from whose drawings and notes the foregoing descriptions of the larva and pupa are drawn up, writes that in some specimens kept in a dark box all the resulting pupæ were pale-ochreous, with the black and orange markings much intensified. Of seven imagines bred in 1873, Mr. Weale wrote that the first, second, and sixth that came out were of the form with all the bands yellow; the fourth with yellow bands, except the subapical bar of the fore-wings, which was white; the fifth with all the bands white; and the third and seventh with brick-red bands and yellow subapical fore-wing bar.

The type-form of *P. Esebria* is by its brick-red coloration well distinguished from its congeners of similar size and pattern. The species is, however, nearly related to *P. flava* (Dewitz), *P. Carmentis*, Doubl., and *P. Lycoa* (Godt.), as is apparent on comparing with these butterflies from Western Africa the yellow-banded and white-banded examples of *Esebria*. *P. flava* is wholly yellowish-banded (judging from Dewitz's figure[1]), but has in fore-wing a very broad subapical patch instead of a narrow bar, and a much paler under-side colouring. In *P. Carmentis* all the bands are pure white, as in many ♀s of the variety of *Esebria*, but the great development of the markings of the fore-wing (where the broad subapical bar irregularly joins, or almost joins, the enlarged inner-marginal patch), and, on the contrary, the considerably narrower hind-wing band, render the former very distinct. The markings of *P. Lycoa* are also wholly white, but semi-transparent; and in the fore-wing, instead of an inner-marginal patch, there is an oblique discal bar, of an inner large and outer small spot, almost parallel to the subapical bar.

The only near ally in South Africa that has hitherto been found is *P. Aganice* (Hewits.), but this is a much larger insect, and at once to be recognised by having only one pale marking in the fore-wing, viz., a central, rather narrow, irregular, transverse bar, yellow in the ♂ and white in the ♀.

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[1] *Nov. Act. K. Leop.-Car.-Deutsch. Akad. Naturf.*, xli. 2, pl. xxv. f. 10 (1879).

I found this variable butterfly numerous in Natal, but did not meet with the rufous-coloured specimens, which (from a ♂ of that coloration having been figured and described by Hewitson, the founder of the species) must be regarded as the typical form. Although Mr. Hewitson's specimens are recorded from Natal, the rufous form seems to be uncommon there, as Colonel Bowker has only forwarded one example (and that aberrant), and I have noticed but one other in collections formed in that Colony. Further southward, however, and as far as King William's Town, Colonel Bowker frequently met with it, and the specimens above mentioned as reared by Mr. Mansel Weale were natives of the last-named locality. In the Hewitson Collection there is a ♀ of this form labelled "Zambesi;" and in the same Collection, and in the Hope Collection at Oxford, I noted wholly white-banded ♀s of the variety A. from the same region.

This is quite a sylvan species, often flying quite *in* the woods, and sometimes rather high among trees. I met with several, however, in gardens at Pietermaritzburg, Natal. It kept out, and in fair condition, from the 1st February to the 8th April 1867. In very fresh specimens (as Mr. Mansel Weale has also noted in one of his letters) there is a submetallic blue gloss over the dark portions of the wings, and a slightly iridescent one over such markings as are white.

Localities of *Planema Esebria*.

- I. South Africa.
  - B. Cape Colony.
    - *b.* Eastern Districts.—King William's Town (*W. S. M. D'Urban* and *J. H. Bowker*).
  - D. Kaffraria Proper.—Butterworth (*J. H. Bowker*). Bashee River (*J. H. Bowker*).
  - E. Natal.
    - *a.* Coast Districts.—D'Urban. Verulam. Mouth of Tugela River (*J. H. Bowker*).
    - *b.* Upper Districts.—Pietermaritzburg.
  - F. Zululand.—St. Lucia Bay (*Lieut.-Col. H. Tower*).
- II. Other African Regions.
  - A. South Tropical.
    - *b.* Eastern Coast.—Zambesi (*Rev. H. Rowley*).—In Coll. Hope, Oxon.; also in Coll. Hewitson.

55. (2.) Planema Aganice, (Hewitson).

♂ *Acræa Aganice*, Hewits., Exot. Butt., i. pl. 29, f. 6 (1852).
♀ *Acræa Aganice*, Trim., Rhop. Afr. Aust., i. p. 109, n. 60 (1862); and Trans. Linn. Soc. Lond., xxvi. p. 516, pl. 42, f. 2 [♂] (1869).

Exp. al., (♂) 2 in. 7–11 lin.; (♀) 3 in. 3–7 lin.

♂ *Brownish-black; a transverse pale-yellow bar about middle of each wing. Fore-wing:* bar rather beyond middle, commencing with two small thin marks next to costa, just beyond extremity of discoidal cell, and consisting of five spots of different sizes and shapes, the largest and lowest of which is between second and first median nervules; on its inner edge this bar is deeply excavated between third and second median nervules; below the end of the bar, but above submedian nervure, a separate small pale-yellow spot, usually rather indistinct, but sometimes well defined. *Hind-wing:* central band of moderate width, narrower towards costa; its inner edge only slightly curved and bounded by a row of small black spots (representing the more conspicuous spots of the under side), its outer edge about parallel to hind-margin, slightly suffused, and denticulated by the beginning of black clouding on the nervules as well as by the tips of black inter-nervular rays; near the base the ground-colour is rather paler, and six or seven black spots (besides the row next yellow bar) are more or less visible. UNDER SIDE.—Similar, but *outer area of both wings dull yellowish-brown*, with the clouded nervules and inter-nervular rays distinct; transverse bars paler. *Fore-wing:* bar wider, suffused, less macular, ofter including or meeting the spot which on upper side is separate. *Hind-wing:* bar narrower, especially towards costa; basal portion warm ochreous-brown, marked with the following well-defined rather small black spots, viz., one close to base, above costal nervure, two farther out below costal nervure, two in discoidal cell, one below median nervure, one (minute) between submedian and internal nervures, one below internal nervure, and a row of eight just on the edge of the yellow bar, between first subcostal nervule and inner margin.

♀ *Duller and paler in ground-colour; transverse bars white, broader. Fore-wing:* bar more even, continuous from costa; separate spot always well marked. *Hind-wing:* bar much less narrowed towards costa. UNDER SIDE.—*Hind-wing:* bar markedly narrower than on upper side throughout; basal brown paler and duller than in ♂.

LARVA.—Pale whitish-green; the spines not rigid, very long, yellowish, set with inconspicuous black bristles. Head yellowish-brown, shining, the base slightly tridentate; mandibles black. Legs of the same colour as the body, longer than usual. Along middle of back, on segments four to eleven, a row of indigo-blue dots arranged in pairs between each subdorsal pair of spines; only one such spot on segments three and twelve. On each side, between subdorsal and lateral rows of spines, a row of larger indigo-blue spots, one on each segment from the second to the eleventh; spiracles ringed with the same colour; also an indigo-blue sub-spiracular festooned streak.

PUPA.—Whitish-green. On back of abdomen four pairs of long divergent red spines, set rather widely apart; on each side between each spine and its successor two indigo-blue dots; on back of thorax three pairs of short tubercular processes, each marked with an indigo-blue dot; head with a pair of similar, longer, curved processes.

PLATE I. fig. 3.

I describe this curious larva and very remarkable pupa from the sketches and notes of Mr. W. D. Gooch, who reared the butterfly in Natal. He observes that one of the caterpillars, in the absence of a proper supply of its food-plant, devoured a chrysalis of its own species.

This *Planema* is nearly related to the West-African *P. Euryta* (Linn.), especially as regards the ♀. The ♂ *Aganice* is, however, a smaller and very differently coloured insect: *Euryta* ♂ (in all its variations) being dull-brown, with the fore-wing band dull-red, while the hind-wing has no distinct band, but only a general dull-red suffusion from the base. The ♀ *Aganice* chiefly differs from the ♀ *Euryta* in its much narrower white bar in the fore-wing. In both sexes the basal spots of the hind-wing are smaller in *Aganice*, and differently arranged as regards the outer row of them, which is straight across, instead of being strongly curved as in *Euryta*.

This is a thoroughly sylvan butterfly, keeping closely to woods and their immediate outskirts. It is a higher flyer than most *Acræinæ*, and delights to sail across clearings after the manner of *Amauris Echeria*, settling quite in the same way, with the wings closed and hanging down, at the end of some overhanging branchlet or twig. I met with it only in the neighbourhood of D'Urban, once in July 1865, and frequently in February and April 1867. It is there accompanied by two rare mimicking species, *Pseudacræa Tarquinia*, Trim., which closely resembles the ♂, and *P. imitator*, Trim., which even more accurately copies both sexes. At the end of 1879 and beginning of 1880, Colonel Bowker met with the paired sexes on two occasions, and sent me the specimens. Unlike its congeners, *P. Aganice* seems to be very constant in both sexes, alike in pattern and coloration. The ♂ when worn has the bands whitish instead of pale-yellow.

Localities of *Planema Aganice*.

I. South Africa.
    D. Kaffraria Proper.—Igora River Mouth (*J. H. Bowker*).
    E. Natal.
        a. Coast Districts.—D'Urban. Umgeni Railway Station (*J. H. Bowker*).

II. Other African Regions.
    A. South Tropical.
        a. Western Coast.—"Angola (*Pogge*)" [? *sp. ead.*]—Dewitz.

GENUS PARDOPSIS, *N.G.*

Acræa, Fab. (part), Boisduval, Faune Ent. de Madag., &c. (1833); Trimen, Rhop. Afr. Aust., i. p. 105 (1862).

IMAGO.—*Head* rather wide; *palpi* slightly swollen, very hairy (especially beneath), the terminal joint not so small as in *Acræa*, and set with hairs; *antennæ* long, more than half the length of the fore-wings, with an abrupt, broad, flattened, spoon-shaped club.

Thorax very short and narrow. *Fore-wings* shaped much as in typical *Acræa*, but rather more prominent apically; costal nervure short, terminating on costa beyond middle; first subcostal nervule given off before extremity of discoidal cell, second considerably beyond it; *upper disco-cellular nervule remarkably long, and so directed longitudinally as to look like a prolongation of subcostal nervure; middle disco-cellular extremely short, the two radial nervules originating close to each other;* lower disco-cellular rather long, only slightly oblique, joining first median nervule at a rather acute angle some way from its origin; discoidal cell thus elongated but very narrow. *Hind-wings* shaped as in typical *Acræa;* second subcostal nervule angulated at junction with upper disco-cellular; radial nervule much curved near its origin. *Legs* as in *Acræa.*

Abdomen longer than hind-wings, remarkably slender, in ♀ without any corneous appendage.

The characters particularised above, and especially the very singular arrangement of the disco-cellular and radial neuration of the fore-wings, seem to warrant the generic separation of *Acræa punctatissima,* Boisd. The very large number of black spots on the wings gives this butterfly a peculiar aspect, and it differs from *Acræa* and *Planema* in having both thorax and abdomen unspotted, the latter being ochre-yellow on the sides and beneath. Its structure is so slender, and its flight so weak, as to remind one of *Pontia Alcesta* among the *Pierinæ.* Originally discovered in Madagascar, it has since been found to have an extensive range in Eastern and South-Eastern Africa.

56. (1.) **Pardopsis punctatissima,** (Boisduval).

Acræa punctatissima, Boisd., Faune Ent. Madag, &c., p. 31, n. 5, pl. 6, f. 2 (1833).

Var. Acræa Stictica, Boisd., App. Voy. de Deleg. dans l'Afr. Aust., p. 590, n. 51 (1847).

Acræa Punctatissima, Trim., Rhop. Afr. Aust., i. p. 105, n. 66 (1862).

Exp. al., 1 in. 6 lin.—1 in. 8 lin.

Pale yellow-ochreous, semi-transparent; thickly spotted with black. Fore-wing: base slightly blackish between the nervures; costa narrowly edged with blackish; apex rather broadly clouded with the same; which is continued along hind-margin in a narrow border, forming rounded spot-like projections between nervules, indenting the ground-colour; three small spots on costa before the middle, and one just beyond the middle; four spots in discoidal cell, viz., two small rounded ones near base, only divided from the first two on costa by subcostal nervure; a large kidney-shaped one, as long as cell is wide, just above insertion of first median nervule; and a rounded spot, not so large as the last, at extremity of cell; a good-sized spot below median nervure, before insertion of first median nervule; a sinuous, irregular, transverse row of seven spots commencing beyond extremity of cell on second subcostal, and extending to inner margin about middle,—the last spot being small, but with a prolongation towards base; parallel and near to hind-margin a row of six round spots between nervules, the upper two generally merged in apical blackish, but quite perceptible; inner margin very thinly edged with blackish. *Hind-wing:* arrangement of spots very similar to that of fore-wing; two rounded spots above subcostal nervure before middle; three in discoidal cell, the outer one at extremity; between cell and inner margin about six spots; a transverse sinuous row of eight spots beyond middle, continuous of that in fore-wing, from costa to inner margin; parallel and near to hind-margin a row of six rounded spots between nervules, also continuous of that in fore-wing; a blackish hind-marginal border, broader than that of fore-wing, and forming rounded projections on ground-colour *between* nervules. UNDER SIDE.—*Paler*, with a slightly glistening surface; position and number of spots precisely as above. *Fore-wing:* no basal blackish; apical blackish limited to a faint and narrow border; hind-marginal border also wanting, but its projections represented by separate spots between nervules. *Hind-wing:* spots on hind-margin as in fore-wing.

Except in being larger, and having the spots and other dark markings more strongly developed, the ♀ does not differ from the ♂.

The South-African variety is rather larger, darker in ground-colour, and with considerably larger spots; it also almost always presents an additional (seventh) spot in the irregular discal row of fore-wing on the inner-marginal edge. When I was only acquainted with the type-form in the shape of Boisduval's figure of a small and faintly-marked example, I was disposed to regard the variety *Stictica* as distinct; but, since comparing the latter with specimens from Madagascar, I consider that it cannot be separated as a species, every spot (with the exception noted) corresponding in the two forms. In the British Museum I examined two unusually small examples, taken by the late Mr. E. C. Buxton beween Natal and Delagoa Bay, which nearly approach the type-form, especially in the smallness and separateness of the hind-marginal spots. These examples expand only 1 in. 3 lin.; and two others (with the spots comparatively larger) sent from D'Urban by Colonel Bowker in 1879 and 1881 expand respectively 1 in. 3 lin. and 1 in. 4 lin.

A similar individual was sent to me by Mrs. Monteiro from Delagoa Bay in 1884; but in it the spots are all very small, and that below median nervure of fore-wing is wanting; the abdomen, too, is more evenly ochre-yellow, as in the Malagasy type.

A specimen from Zanzibar in the British Museum, also below the usual size, has the fore-wing spots rather small, but the apical fuscous very well developed, while the hind-wing spots are tolerably large.

This butterfly was not uncommon in the neighbourhood of D'Urban, Port Natal, from the beginning of February to the beginning of April 1867, but it was nowhere numerous. Its flight is very low and weak, and it is scarcely ever to be seen away from wooded spots. I met with a few examples in the other localities mentioned below, but none of these, except the Intzutze River, was at any distance from the coast. Colonel Bowker did not find this butterfly in Kaffraria Proper, nor have I seen any specimens from that region; but a single individual was in 1870 taken by Miss Agnes Bowker on the Buffalo River, near King William's Town, and there is thus some reason for supposing that the species does inhabit the country between the Cape Colony and Natal.

Localities of *Pardopsis punctatissima.*

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—King William's Town (*Miss Agnes Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Mapumulo.
    b. Upper Districts.—Intzutze River, Great Noodsberg.
  F. "Zululand (*A. Delegorgue*)."—Boisduval.
  H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—Zanzibar (Coll. Brit. Mus.)
    bb. Madagascar.

SUB-FAMILY 4.—NYMPHALINÆ.

Nymphalides, *Morphides*, and *Biblides*, Boisd., Sp. Gen. Lep., i. pp. 165–167 (1836).
Ageronidæ, *Nymphalidæ*, *Morphidæ* (part), and *Eurytelidæ*, Doubl. and Westw., Gen. D. Lep., i. pp. 81, 143; and ii. pp. 332, 403 (1852).
Nymphalidæ and *Eurytelidæ*, Trim., Rhop. Afr. Aust., i. p. 112; and ii. p. 210 (1862–66).
Nymphalinæ, Bates, Journ. Ent., 1861, p. 220; 1864, p. 176.

IMAGO.—*Head* of moderate size or rather broad, more or less hairy; *eyes* rather large, seldom hairy; *palpi* always well developed, projecting considerably in front of head, clothed with scales, and beneath more or less compactly with hairs; *antennæ* usually long and stout, their club sometimes broad, abruptly formed, and flattened,—sometimes gradually formed and more or less cylindrical.

Thorax always robust, in some genera very long and thick, more or less pilose. *Wings* large and of thick consistency, the nervures strong and rigid. *Fore-wings:* variable in outline, commonly more or less pointed or produced apically, often angulated; almost always with the hind-margin more or less sinuate or dentate; costa well or strongly arched; inner margin usually more or less emarginate about middle; discoidal cell usually short, more often closed than open, but the closing lower disco-cellular nervule commonly very attenuated; nervures rarely swollen basally; subcostal nervure emitting one or two branches before extremity of discoidal cell, the fifth branch always with an obliquely downward direction, so as to reach hind-margin at some little distance below the fourth branch. *Hind-wings:* broad and rounded, often angulated at extremity of third median nervule, or produced at anal angle; costa always markedly convex next base, and often much arched throughout; hind-margin more dentated than in fore-wings, often scalloped, sometimes bearing more or less pronounced processes or "tails" on third and first median nervules; inner margins strongly convex from base to beyond middle, and meeting to form a deep groove usually completely covering under side of abdomen; discoidal cell short, often quite open, but more commonly imperfectly closed by a very thin or interrupted lower disco-cellular nervule; costal nervure long, extending to apex; internal nervure strongly developed, usually extending to beyond middle, and sometimes to a point not far from anal angle. *Fore-legs* of ♂ very slender, short, more or less hairy, especially tibia and tarsus, which are often very densely fringed; tarsus one-jointed, rather thickened at tip; those of the ♀ rather larger, less hairy or even smooth, with the tarsus indistinctly articulated and shortly spinose beneath. *Middle and hind legs* rather long and stout; tibiæ and tarsi almost always more or less spinose; the latter particularly so on the under side.

Abdomen short (never more than three-fourths the length of inner margin of hind-wings, usually about half, and often still less), deep at base, compressed laterally, and acuminated posteriorly.

LARVA.—Spiny generally, with segmental incisions constricted; or slightly rugose, with horns or spines on head only, and with the middle part thicker than the rest of the body.

PUPA.—Short and stout, abdominal portion generally much curved; commonly with head and thorax more or less angulated, and back of abdomen tuberculated.

The butterflies of this Sub-Family are well distinguished from other *Nymphalidæ* by their robust structure generally, only *Morpho* and some allied genera (treated as a distinct Sub-Family by some authors) exhibiting in their feeble organisation, as well as in the more reduced fore-legs, and in the characters of the larvæ, an approximation to the *Satyrinæ.* The prominent scaly palpi, long and strong antennæ, broad wings, and stout spiny middle and hind legs, are striking and characteristic features of the *Nymphalinæ*, no less than the deep groove or channel formed by the dilated inner margins of the hind-wings, and the usually open or imperfectly-closed discoidal cells of both wings. The first pair of legs, though much reduced, is not nearly so atrophied as in the *Danainæ* or *Satyrinæ* (especially in the ♂), being always easily observable and better developed than in the *Acræinæ.* The wings are densely scaled in almost all the genera, and no instance of a transparent-winged species is known.

It is to the *Nymphalinæ*, numbering nearly two thousand species, or almost as many as all the rest of the *Nymphalidæ* put together, that the swiftest and most active, and very many of the largest and most splendidly-coloured, butterflies belong. Such conspicuous and familiar forms as the Fritillaries, *Vanessæ*, and *Apaturæ* of Europe are replaced or accompanied in the warmer parts of the world by very numerous allies of far greater size, brilliancy, and speed. Every variety of outline, pattern, and coloration is to be found in this group, which may be said to culminate in the magnificent genera *Morpho* of South America and *Thaumantis* of the Oriental Region,—butterflies whose beauty and great size are unequalled except in the groups *Brassolinæ* and *Papilioninæ*. These giants among butterflies are not, however, remarkable for swift flight, the palm for speed being assignable to the more powerfully-built allies of *Apatura*, such as the Old-World genus *Charaxes* and the American *Prepona* and *Agrias*.

Though exceedingly active and alert, nearly all the *Nymphalinæ* have the habit of keeping about some spot of limited extent, even the swiftest of them, after darting away at a speed which the eye can hardly follow, returning again and again to the same place, and often to the very same favourite flower or twig.

Of the twenty genera known to occur in South Africa, none is endemic, but nine are limited in range to the Ethiopian Region, viz., *Lachnoptera*, *Crenis*, *Euralia*, *Pseudacræa*, *Euryphene*, *Euphædra*, *Hamanumida*, *Harma*, and *Godartia*. All the remaining genera extend through the Ethiopian Region, and have a more or less extensive range beyond it, viz., *Eurema* in Central and South America; *Precis*, *Salamis*, *Eurytela*, and *Hypanis* over much of the Oriental Region; while *Neptis* and *Charaxes* add to that range Southern Europe and Australia; and *Atella*, Australia and some of the groups of the Pacific Islands; *Junonia* and *Diadema* extending over yet wider regions, omitting Europe, but including a great part of America; and *Pyrameis* being truly cosmopolitan.

The genus best represented in South Africa is *Charaxes* (fifteen species), and next to it *Precis* (twelve species). *Crenis* and *Pseudacræa* have each four representatives; *Junonia*, *Neptis*, and *Euralia*, three; *Atella*, *Eurema*, *Salamis*, and *Eurytela*, two; and the remaining nine genera one species only.

The *Nymphalinæ* afford some of the most striking cases of mimicry yet discovered among butterflies. The genera *Limenitis*, *Hestina*, and *Diadema* include several very exact copies of sundry species of *Danais* and *Euplœa*; but *Euralia* and *Pseudacræa* seem really to depend for their existence upon accurately mimicking the species of *Amauris* and certain *Acræinæ*. Some of these cases have been already mentioned above, and will again be referred to under the Nymphaline genera in question.

GENUS ATELLA.

Atella, E. Doubl., Gen. Diurn. Lep., i. p. 165 (1848).

IMAGO.—*Head* very broad, wider than thorax, tufted with hair superiorly; *eyes* smooth, very prominent; *palpi* wide apart, projecting considerably in front of head,—the second joint long and swollen, thicker anteriorly, grooved centrally and longitudinally beneath, closely hairy above but scantily so beneath,—terminal joint very small and slender, acutely pointed, clothed with scales; *antennæ* of moderate length, with rather a gradually-formed, flattened, not broad, spoon-shaped club.

Thorax moderately robust, rather short, hairy (especially on breast). *Fore-wings* prominent apically; costa well arched; hind-margin rather hollowed in middle; inner margin slightly hollowed beyond middle; costal nervure short, ending about middle; first subcostal nervule given off at or just before extremity of discoidal cell, second at a little or considerable distance beyond it; discoidal cell short, closed by attenuated lower disco-cellular nervule joining median nervure about origin of its second nervule; upper disco-cellular nervule extremely short, straight,—middle one of moderate length, much curved inwardly. *Hind-wings* very slightly or more distinctly prominent in the lower anal-angular portion; costa slightly arched; hind-margin moderately dentated,—the dentation at end of third median nervule more pronounced than the others, and sometimes prolonged into a short tail; inner-margins almost touching as far as end of internal nervure—forming a very wide, shallow, imperfect groove—but thence divergent; costal nervure extending to apex; first subcostal nervule arising not far from base, and very oblique upper disco-cellular nervule only a little distance farther; lower disco-cellular short, very thin, almost atrophied, slightly curved; discoidal cell short, narrow; internal nervure extending to considerably beyond middle. *Fore-legs* of ♂ very slender; tibia and femur of about equal length, the former and tarsus densely fringed with hair: of ♀ longer and thicker, not or very slightly hairy; tarsus indistinctly articulated, and slightly spined beneath. *Middle and hind legs* moderately stout, scaly; femora smooth; tibiæ and tarsi very spinose beneath, less so above; tibial spurs long, very slender.

Abdomen short, slender, slightly arched.

LARVA.—Armed with rather long spines set with bristly hairs; head without spines or horns.

PUPA.—Moderately stout, not much curved abdominally, and rather rounded anteriorly; dorsal region with six or seven pairs of pointed tubercles or short thin spines.

The differences which distinguish this genus from *Argynnis*—the well-known group so largely developed in the Palæarctic and Nearctic Regions—are very slight. They consist in (1) the palpi having the second joint less swollen and with much denser, longer hair beneath, and the terminal joint much smaller; (2) the antennæ possessing a broader, more abruptly-formed club; (3) the fore-wings having the costal nervure shorter,—the first subcostal nervule arising at or just before (instead of considerably before) the end of the discoidal cell,—and the second at some distance beyond (instead of just before or at) the end of the cell, while the lower disco-cellular nervule joins the third median nervule at some distance from (instead of at) its origin; and (4) the hind-wings present a more or less decided projection (wanting in *Argynnis*) at the extremity of the third median nervule.

Atella is essentially a Tropical Old-World group, its ten or twelve known species ranging from the West Coast of Africa (*A. Columbina*, Cram.) to Tahiti (*A. Gaberti*, Guér.) The most widely distributed species is *A. Phalanta* (Drury), which inhabits a large part of Africa, all the Oriental Region, and even enters the Australian Region as far as Timor. The Oriental Region is the home of the genus, four species inhabiting it, including the section, of which *A. Egista* (Cram.) is the type, in which the hind-wings not only have a distinct "tail" on the hind-margin, but are prolonged in the anal-angular area.

Two species inhabit South Africa, *A. Phalantha* and *A. Columbina*, and are the only members of the genus known to extend beyond the Tropics. They are very closely allied; but while the former is spread pretty generally over the country except to the westward, the latter has only been found hitherto on the Natal coast. *Phalantha* is a very active insect, of considerable powers of flight, and though frequent in wooded places, is very often to be met with in gardens and open ground.

57. (1.) **Atella Phalantha**, (Drury).

Papilio Phalantha, Dru., Ill. Nat. Hist., i. pl. 21, ff. 1, 2 (1770).
Papilio Columbina, ♀, Cram., Pap. Exot., iv. t. 337, ff. D, E (1782).
Papilio Phalanta, Fab., Ent. Syst., iii. 1, p. 149, n. 455 (1793).
Argynnis Phalanta, Godt., Enc. Meth., ix. p. 259, n. 10 (1819).
„ „ Boisd., Faune Ent. de Mad., p. 41 (1833); and App. Voy. de Deleg., p. 592 (1847).
Atella Phalanta, Trimen [part], Rhop. Afr. Aust., i. p. 115 (1862); and ii. p. 334 (1866); also in Trans. Ent. Soc. Lond., 1870, p. 352.
„ „ Moore, Lep. Ceylon, p. 62, pl. 31, f. 1 (1881).

LARVA AND PUPA.

(*Javanese*) Horsf. and Moore, Cat. Lep. E. I. C. Mus., i. pl. 5, ff. 7, 7a (1857).
(*Cingalese*) Moore, Lep. Ceylon, p. 62, pl. 31, ff. 1a, 1b (1881).

Exp. al., 2 in. 1½–6½ in.

Warm yellow-ochreous, spotted with black; hind-margins with three lunulate and festooned black streaks. Fore-wing: two thin, waved, transverse black streaks in discoidal cell, that nearer base very short, the other considerably longer, but not reaching median nervure; at extremity of cell, two transverse similar streaks, one outwardly, the other inwardly bordering the disco-cellular nervules; on costa, a little beyond cell, commences a row of seven spots, *very sharply elbowed on lower radial*, of which the first three are contiguous, and form a short irregular bar; the fourth is rather farther from base, and lies between lower radial and third median nervules; while the fifth, sixth, and seventh, widely separated, follow a line below median nervure in the direction of the inner margin near base; the seventh spot is often small and indistinct, and sometimes obsolete; beyond middle, a rather suffused macular black streak from costa to lower radial, occasionally extended to third or second median nervule by one or two small, separate, ill-defined spots; parallel to hind-margin a row of five spots between upper radial and sub-median nervure, all of which are small and rounded, except the fifth, which is large and sub-quadrate, and nearer hind-margin than the others; from costa to sub-median nervure, a strongly-marked sub-marginal festooned line, connected at extremities of nervules with a row of contiguous sub-triangular markings on hind-marginal edge; a distinct thin black line from costa traverses the points of junction of the festooned streak and the markings of hind-marginal edge. *Hind-wing:* on costa, a little beyond middle, a linear black mark, rarely continued by another similar mark towards extremity of discoidal cell; beyond middle, a row of four spots, rather larger than the corresponding spots in fore-wing, between upper radial and first median nervules; festooned and other hind-marginal markings, much as in fore-wing, but the festooned line not so regularly connected with the markings of hind-marginal edge, and the thin traversing middle streak not straight, but lunulated. UNDER SIDE.—*Much paler, rather glossy, varied with violaceous clouding; black markings mostly replaced by indistinct brownish or grey ones. Fore-wing:* violaceous clouding in discoidal cell and over central portion of hind-marginal area; cellular streaks much thinner than on upper side, but well defined; elbowed transverse macular row indistinct, except the two last spots (which are themselves sometimes reddish-brown instead of black); costal macular streak beyond middle reddish-brown, the spots continuous of it forming a row extending to beneath first median nervule, and all reddish-brown except the lowest, which is usually black; spots of outermost transverse row obsolete, except the fourth and fifth, of which the latter is larger than on upper side, and very conspicuous; hind-marginal markings all brownish, and indistinctly marked. *Hind-wing:* an irregular, interrupted, reddish-brown, thin streak from costa before to inner margin beyond middle; in discoidal cell, a short, transverse streak of the same colour; a more continuous, less irregular streak than the interrupted one, crossing middle a little beyond the latter, from costal nervure to inner margin; space between it and festooned streak (which, with other hind-marginal markings, are thinly expressed in greyish or reddish-brown) dull-violaceous, more or less varied with the pale ground-colour, and containing four ill-defined small ocelli, black-centred, with rufous-brown and pale yellow-ochreous rings, answering to the black spots of the upper side.

A singular aberration of the ♂, taken by Colonel Bowker near D'Urban, Natal, in the year 1880, has all the markings of the fore-wings, and a few of those of the hind-wings, *dull-grey and partly transparent*, instead of black and opaque. This is an unusually large ♂, expanding 2 in. 5 lin. A very small, normally marked ♂, taken in the same locality by Colonel Bowker in August 1881, expands only 1 in. 9 lin., and has the violaceous clouding very strongly developed.

LARVA.—Green; a white stripe along each side above the legs; four spines of moderate length, set with hairs, on each segment from second to twelfth; only two spines on last segment; head brownish-red. (*Javanese:* described from the figure in Horsfield and Moore's *Cat. Lep. E. I. C. Mus.*, 1857, pl. v. f. 7.)

Dark-brown; the spines black. Traces of the whitish lateral stripe on the five hinder segments. (*Cingalese:* described from the figure in Moore's *Lepidoptera of Ceylon*, 1881, pl. 31, f. 1*a*.)

PUPA.—Green, darker on the back, inclined to yellowish beneath. Margin of wing-covers laterally edged with blackish. A dorsal series of small pointed tubercular processes, apparently shining-blackish, arranged in pairs from head to penultimate segment. (*Javanese:* described from *op. cit. sup.* f. 7*a*).

Yellowish-green; margin of wing-covers white, edged on both sides with crimson; tubercular pointed processes white, ringed with crimson at base. (*Cingalese:* described from *op. cit. sup.* 1881, f. 1*a*.)

Pale-green. Eyes, a spot on back of head, inner and hind margins of wing-covers, and dorso-abdominal pointed tubercular spots, silvery-white edged with dark-red. (*Natalian:* described from a figure drawn by Captain H. C. Harford.)

The Javanese larva is described by Dr. Horsfield (*op. cit.* p. 152) as feeding on a species of *Ixora*, and that of Ceylon by Mr. Moore as eating *Flacourtia*, *Salix*, &c. As I have elsewhere noted (*Trans. Ent. Soc. Lond.*, 1870, p. 352), Colonel Bowker found the larvæ very numerous in Basutoland on the native willow (*Salix Gariepensis ?*); but he did not make any description of them.

A. Phalantha varies considerably in size and tint (some of the female specimens presenting a greenish tinge), and also in the size of the black spots. In Mauritius (where I met with the species numerously) and in Madagascar the examples known agree closely with South-African ones, except that in the former island they are usually smaller and with the discal black spots of the hind-wings rather larger. Three from the Comoro Islands (Johanna), in the British Museum, are also of small size, one of them having the ocelli on the under side of the hind-wings rather strongly black-centred. In the Asiatic Region, however, though the Cingalese examples are of small size (*exp. al.*, 2 in. $1\frac{3}{4}$–

3 lin.), the butterfly appears constantly to present on the upper side of the fore-wings the middle discal row of black spots, which in South-African individuals is only completely shown on the under side; and in the same way they possess on the upper side of the hind-wings two lines of disconnected short thin black lines before the discal row of spots corresponding in position to the streaks present on the under side. The largest examples are those from China, the type-specimen figured by Drury expanding about three inches.

A. Phalantha has quite the habits of the larger European species of *Argynnis;* but its flight is more rapid and irregular, and it usually rests on a flower for a very short time before hurrying on again. It is conspicuous on the wing, looking almost golden in the sunshine. In August 1865 I took an example near D'Urban, Natal, and in 1867, from February to April, often met with the species in that Colony, most commonly near Pietermaritzburg. Colonel Bowker has forwarded to me two pairs of *Phalantha* captured *in copulâ*, one at D'Urban in April 1881, the other at Isipingo in November 1882; the sexes present no noticeable difference in either case.

Localities of *Atella Phalantha*.

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—Kleinemond River, Bathurst (*H. J. Atherstone*).
    c. Griqualand West.—Vaal River (*M. E. Barber*).
    d. Basutoland—Maseru (*J. H. Bowker*).
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Isipingo (*J. H. Bowker*).
    b. Upper Districts.—Pietermaritzburg. Estcourt (*J. M. Hutchinson*).
  F. Zululand.—St. Lucia Bay (*H. Tower*).
  H. Delagoa Bay (*J. J. Monteiro*).
  K. Transvaal.—Potchefstroom (*T. Ayres*). Marico River (*F. C. Selous*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast. "Angola (*J. J. Monteiro*)."—H. Druce. Do. (*Dr. Pogge*, "10° S. lat.")—H. Dewitz.
    b. Eastern Coast.—Zambesi (*Rev. H. Rowley*). "Querimba."—Hopffer.
    bb. Comoro Islands: Johanna (*Bewsher*). Madagascar (*Grevé*). "Bourbon."—Boisduval. Mauritius.
  B. North Tropical.
    b. Eastern Coast.—"Abyssinia: Shoa (*Antinori*)."—Oberthür.

IV. Asia.
  A. Southern Region.—India (North India, Nepaul, Bengal: Brit. Mus.; "Kurrachee:" C. Swinhoe). Ceylon (*E. L. Layard* and *H. Trimen*). Malacca, Penang: Brit. Mus. China (Shanghai: Brit. Mus.)
  B. Malayan Archipelago.—Java: Brit. Mus.

V. Australia.—Austro-Malayan Archipelago.—"Celebes (Macassar), Timor."—Wallace.

58. (2.) **Atella Columbina**, (Cramer).

Papilio Columbina, Cram., Pap. Exot., iii. pl. 238, ff. A, B (*nec* iv. pl. 337, ff. D, E = *Phalanta*, Dru.) (1782).
Papilio Columbina, Fab., Ent. Syst., iii. 1, p. 148, n. 453 (1793).
Atella Eurytis, Doubl., Gen. Diurn. Lep., p. 167, pl. 22, f. 3 (1848).
Atella Phalanta, var., Trimen, Rhop. Afr. Aust., i. p. 115 (1862).

Exp. al., 2 in. 2–6 lin.

♂ *Warm yellow-ochreous inclining to fulvous, spotted with black; hind-margins with three strongly-marked lunulated and festooned black streaks. Fore-wing:* markings as in *A. Phalantha*, Drury, except in the following particulars, viz., transverse streaks in and at extremity of discoidal cell finer, better defined, less irregular,—those at extremity farther apart; spots of elbowed transverse row below median nervure thinner, more elongate,—in some specimens (*Eurytis*, Doubl.) partly or all but the uppermost one obsolete; spots of discal row larger; submarginal inner festooned streak more sharply angulated between nervules; contiguous subtriangular markings on hind-marginal edge completely confluent; the streak between them and festooned streak more strongly marked and distinctly lunulated. *Hind-wing:* differing as follows from that of *A. Phalantha*, viz., no markings before middle (except very faintly in one example); spots of discal row larger,—in some examples much larger and suffused; festooned streak and following hind-marginal streaks presenting the same differences as shown in fore-wing. UNDER SIDE.—All the markings better defined than in *Phalantha; all the spots of discal row in both wings more or less conspicuously black*,—in some examples much enlarged. *Fore-wing:* besides the very large fifth spot of discal row, the fourth is considerably enlarged and conspicuous. *Hind-wing:* transverse streaks before and about middle more regular and continuous,—the space between them paler than basal area; *outer streak immediately followed by a rather wider interrupted glistening-whitish one, tinged with violaceous;* spots of discal row distinctly ocellate, with broad rings of fulvous,—a fifth ocellus (not quite complete) between first median nervule and submedian nervure.

♀ *Paler, duller; the black markings more or less suffused* (especially the cellular streaks of the fore-wing and the costal markings beyond them). *Fore-wing:* a brownish-grey cloud over basal region. *Hind-wing:* fulvous rings of spots of discal row distinctly perceptible. UNDER SIDE.—Paler; the violaceous clouding more or less inclining to silvery.

This very near ally of *A. Phalantha* (Drury) is to be distinguished from it by the characters pointed out in the above comparative description, of which the most striking and apparent are—(1) the great, or very great, development of the black spots of the discal row; (2) the deeper colour of the male; (3) the dull and pale colour of the female; and (4) the broken whitish streak on the under side of the hind-wing outwardly edging the median transverse fulvous streak. The entirely unmarked upper-side basal field of the hind-wing, and the frequent failure of the lower spots of the elbowed row of the fore-wing, are also characters not presented by *Phalantha*. A strict examination of Cramer's figures A and B on his Plate ccxxxviii. will show the lepidopterist that they represent the form now under notice; while those marked D and E on his Plate cccxxxvii. thoroughly agree with the *Phalantha* of Drury.

A. Columbina (as here restricted) is a purely African species, attaining its greatest size and distinctness on the North-Tropical West Coast. I have examined the specimen marked "*Eurytis* D." in the British Museum, which is ticketed "West Africa," and appears to have been the type figured in the *Genera of Diurnal Lepidoptera*, and found that it agreed with Natalian examples, except in the diminution of the cellular and discal markings, and in the absence of all but the uppermost of the spots of the lower part of the elbowed row in the fore-wings.

? LARVA.—Greenish-black, varied yellowish-green and light-green subdorsally; a yellowish-white line above legs, slightly angulated upward on each segment. Top of head and of second segment yellowish-green; face with black markings on each side. Spines long, shining, set with alternating hairs; the second, third, and last segments having 4 (2 subdorsal and 2 lateral), and the remaining segments 6 (the additional 2 being infra-spiracular) spines each. Length about 11 lin.

? PUPA.—Bright-green, with crimson streaks and spines and burnished golden spots. Inner- and hind-margin of wing-covers edged with raised golden streak, outwardly bounded by a crimson one. *Five pairs of curved, thin, divergent, crimson spines* on the back, springing from golden spots, viz., one pair on the head, one (shorter) on thorax, and three on abdomen. Also two pairs of dorsal small pointed crimson tubercles, one at hinder part of thorax, the other at base of abdomen.

Pupal stage lasted eight days in the month of November.

I give the above description of the larva and pupa with some little doubt, as Mr. Gooch refers the pencil outline and notes from which (with two pupa skins) they are drawn up to *A. Phalantha.* He, however, was not at the time aware of the existence of two species of *Atella* in Natal, and would naturally include *Columbina* under *Phalantha.* I subsequently saw both species together in his collection. The differences presented by this caterpillar and chrysalis from those of *Phalantha* are considerable, especially as respects the pupa; and it may almost be assumed that they are the early stages of *Columbina.*

I did not take or notice this butterfly in Natal; but Colonel Bowker early in April 1881 took several examples in the park at D'Urban, where they frequented a species of tree then in flower. In sending me the specimens, he wrote that while pursuing each other these butterflies did not have anything to do with *A. Phalantha*, which was common at the same spot, but did not visit the particular tree. I examined three individuals (♂ and two ♀s) ticketed "Port Natal" in the collection of the British Museum, and found them to present no differences from those received from Colonel Bowker.

Localities of *Atella Columbina.*

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban (*J. H. Bowker* and *W. D. Gooch*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—Angola : Brit. Mus.
  B. North Tropical.
    a. Western Coast.—Camaroon ; Old Calabar ; Sierra Leone : Brit. Mus. "Gaboon (*Theorin*)."—Aurivillius.
    b. Eastern Coast.—"Abyssinia (Shoa : *Antinori*)."—Oberthür [*A. Eurytis*].

GENUS LACHNOPTERA.

Lachnoptera, E. Doubl., Gen. Diurn. Lep., i. p. 161 (1848).

IMAGO.—Closely allied to *Atella*, Doubl. *Palpi* with the second joint not grooved, less swollen, more hairy beneath; *antennæ* with a longer, narrower, less flattened, not spoon-shaped club. *Fore-wings* more markedly produced apically, and more prominent towards posterior angle; hind-margin more sinuate; costa more arched; discoidal cell broader; lower disco-cellular nervule better developed, much longer, straighter, joining median nervure before origin of the second nervule. *Hind-wings* considerably longer in lower half, angulated bluntly at extremity of third median nervule; anal angle square and prominent, not rounded off; inner margins more prominent, and forming a more complete groove as far as end of internal nervure, but beyond that point more emarginate; discoidal cell fully open, the lower disco-cellular nervule being quite obsolete; in ♂ a conspicuous roughly-ovate silky patch near costa and apex.

It is questionable whether the differences above noted are sufficient to warrant the generic separation from *Atella* of the two species comprised in *Lachnoptera;* but the butterflies in question, apart from the striking sexual badge in the male, have a peculiar *facies*, owing to the length and truncate form of the hind-wings.

The group is limited to Africa, and was founded by Doubleday on *P. Iole*, *Fab.*, a species ranging from Sierra Leone to the Gaboon. Until 1874 I was not aware that any South-African representative existed; but in that year Mr. W. D. Gooch sent me a drawing of an indubitable ♂ *Lachnoptera*, taken in Natal, and not long afterwards the specimen itself. I did not wish to found a new species on a single example of one sex, and it was not until 1879 that I had the pleasure of receiving from the same entomologist a pair of the butterflies captured by himself on the Natal coast. Colonel Bowker has since been most successful in obtaining numerous examples of both sexes in the neighbourhood of Pinetown.

59. (1.) **Lachnoptera Ayresii**, Trimen.

Plate III. fig. 5 (♂), fig. 5*a* (♀).

♂ ♀ *Lachnoptera Ayresii*, Trim., Trans. Ent. Soc. Lond., 1879, p. 326.

Exp. al., (♂) 2 in. 2–5 lin.; (♀) 2 in. 5–7⅓ lin.

♂ *Warm fulvous-ochreous* (a faint rosy-violaceous surface-gloss), *with fuscous markings. Fore-wing:* beyond middle a conspicuous transverse bar from costa to third median nervule, exteriorly irregularly dentated, interiorly suffused and emitting two linear rays (along costa and subcostal nervure respectively) towards base; about midway between this bar and apex a similar much smaller bar, not extending below first radial, exteriorly confused on costa with some narrow apical fuscous clouding; beyond middle, extending from fifth subcostal nervule to submedian nervure, a somewhat irregular row of six variously-shaped spots, of which the first (touching apical fuscous) and last are larger than the rest, and about equal in size; near hind-margin a well-marked, strongly-lunulated streak, from just before apex to extremity of submedian nervure; between second radial and second median nervules this streak is interiorly broadly suffused, so as to form a conspicuous irregular marking; a submarginal streak touching the lunulated streak at extremities of nervules; hind-margin itself unequally clouded with fuscous; a very faint linear streak closing discoidal cell, preceded by traces of another. *Hind-wing:* sexual badge glossy leaden-grey, occupying costal-apical area, covering both subcostal nervules, but not reaching radial or anywhere extending to edge of wing; about middle, disconnected traces of a thin transverse streak; beyond middle, an irregular row of four sublinear lunulated marks, preceded (between second median nervule and submedian nervure) by two small rounded spots; lunulated and submarginal streaks as in fore-wing, but the former presenting no suffused marking; hind-margin free from any fuscous clouding. Under side.—*Soft ferruginous-ochreous, clouded with violaceous in parts; the markings chiefly fulvous-ochreous and inconspicuous. Fore-wing:* inner marginal area, as far as a little above first median nervule, pale yellow-ochreous; all the markings corresponding to those of the upper side almost obliterated, except the last spot in the transverse row, which is fuscous and conspicuous; in discoidal cell two irregular fulvous-ochreous rings; beyond them, an interrupted transverse streak of the same colour, meeting (between first median nervule and submedian nervure) a similar interrupted streak from costa a little beyond middle; just above posterior angle a slight hoary-grey clouding. *Hind-wing:* a fulvous-ochreous irregular streak before middle, from costal to below submedian nervure; a short linear streak of the same colour closing discoidal cell; about middle, an indistinct similar transverse streak, bounded exteriorly by a sinuated interrupted series of white spots; these spots immediately succeeded by some dusky violaceous clouding, which completely surrounds two faintly white-centred fulvous-ochreous ocelli (in narrow rings of the ground-colour) between first subcostal and radial nervules, as well as two other similar ocelli between second median nervule and submedian nervure; beyond these, a broken irregular line of lunular marks, succeeded by lunulated and submarginal streaks corresponding with those of the upper side—all fulvous-ochreous; a hoary-violaceous clouding about upper hind-marginal area.

♀ *Duller and paler than ♂, and without violaceous gloss; all the fuscous markings more pronounced. Fore-wing:* from lower extremity of first costal bar, an irregular interrupted streak extending to about middle of submedian nervure; second costal bar prolonged to third median nervule by two small elongate spots; all spots of discal row larger than in ♂; two cellular streaks distinct, the inner one extending below cell and a little over first median nervule. *Hind-wing:* about middle, an irregular interrupted streak (continuous of that in fore-wing) extending and gradually attenuating as far as submedian nervure beyond middle; three *black spots* (of which the two upper are large and the costal one somewhat suffused) *take the place of the leaden-grey badge of the ♂*; these spots are continuous of the discal row of the fore-wing, and the costal one is anteriorly bounded by a whitish lunule. UNDER SIDE.—Very different in colour from that of the ♂, *being very pale dull greyish-ochreous, with a strong brassy-greenish gloss;* nearly all the markings indistinct. *Fore-wing:* last spot of discal row large and conspicuous. *Hind-wing:* the interrupted series of white spots *wanting;* ocelli with small but conspicuous white centres; an additional (fifth) ocellus next costa.

In outline this *Lachnoptera* differs from the only species hitherto known, *L. Iole* (Fab.), from West Africa, the fore-wings being more produced apically, and the hind-wings more angulated at the extremity of the third median nervule. The male differs from the ♂ *Iole* on the upper side in both colouring (which is brighter and yellower) and marking, the fore-wings presenting *two costal blackish bars* and a blackish suffused marking on the lunulated submarginal streak, and the hind-wings having a much smaller sexual badge. On the under side, the South-African form has the markings far less distinct, and *the white stripe of the hind-wings is interrupted and macular;*[1] the latter wings also want the ocellus, which in *Iole* is situated between the subcostal nervules. The female differs greatly in appearance from the butterfly which the late Mr. Hewitson referred (I believe rightly) to that sex of *Iole*, which I noted as "fuscous; all the outer area of the wings dull-white, with the spots and streaks strongly and blackly marked, markings of the under side agreeing with those of *Iole* ♂."[2]

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[1] This character appears to be highly variable. It is quite wanting in two of the twelve males received from Colonel Bowker; in two others, reduced to two and three white spots next costa; and in three others, very thin, and with wide interruptions. Of the six females, one has the stripe represented by two small white spots next costa; and another has the three lowest spots of the stripe also present, and the immediately following violaceous clouding well represented quite across the wing.

[2] There seem to be two distinct forms of the female *Iole*. The type of the species in the Banksian Collection (which I had the opportunity of examining in 1881) is a ♀, not differ-

This interesting new species I have named after its discoverer, Mr. B. Ayres, of Pinetown, in Natal, who took a single male in that locality. Mr. W. D. Gooch, who brought the specimen to my notice, subsequently took another ♂, and also the ♀ above described, at his farm on the coast of Natal.

Until April 1883 I saw no further examples of this butterfly; but on the 23d of that month I received from Colonel Bowker seven specimens just captured by him at Pinetown, and he has since forwarded eleven others from the same locality. These others were taken in December and January, and among them were the paired sexes captured on January 16th. The wings of most specimens that had been out for some time were much tattered, which Colonel Bowker attributes partly to the insect's pugnacious habit of attacking and driving away other butterflies, and partly to the assaults of a large *Mantis*. He describes *Ayresii* as flying up and down the edge of a wood, at a height of from six to ten feet from the ground.

Localities of *Lachnoptera Ayresii.*

- I. South Africa.
  - E. Natal.
    - *a.* Coast Districts.—D'Urban [Little Umlhanga] (*W. D. Gooch*). Pinetown (*B. Ayres* and *J. H. Bowker*).

GENUS PYRAMEIS.

Pyrameis, Hübn. (and Vanessa, Hübn.), Verz. Bek. Schmett., p. 33 (1816); Doubl., Gen. Diurn. Lep., i. p. 202 (1849).
Cynthia (pars), Fab., "Illig. Mag., vi. p. 281 (1807)."

IMAGO.—*Head* moderately broad, densely hairy; *eyes* closely covered with fine short hairs; *palpi* long, projecting considerably in front of head, convergent at tips,—second joint elongated, thickened beyond middle, set with long hairs superiorly and outwardly, scaly and finely downy beneath,—terminal joint well developed, somewhat flattened laterally, acuminate, scaly, and slightly downy; *antennæ* rather long, with an abruptly-formed, flattened, elongate-ovate club, having its terminal joint minute and pointed.

Thorax rather long, robust, densely hairy, especially on breast and on back of metathorax. *Fore-wings:* more or less produced apically, and sometimes bluntly angulated at extremity of lower radial nervule; costa but slightly arched; hind-margin moderately sinuate, emarginate about middle; inner margin nearly straight; costal nervure ending about middle of costa; first and second subcostal nervules arising close together, a little before extremity of discoidal cell,—third at a long distance beyond it, and terminating at apex; upper disco-cellular nervule obsolete, middle one very short and oblique, lower very long, but so much atrophied as to be rudimentary only,—its termination

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ing very widely from the ♂, and, except for its large size, not unlike the ♀ of *Atella Columbina* (Cram.) In the Collection of the British Museum there are, however, two ♀s like that mentioned in the text—one from Sierra Leone, and the other from the Gaboon River—which to a great extent resemble the ♀ *Harma Althea* (Cram.) of the same region.

being on third median nervule at a little distance from its origin. *Hind-wings:* broad, often somewhat prolonged in anal-angular portion; costa moderately or very slightly arched, but prominent at base; hind-margin moderately dentate-sinuate, the dentations on third and first median nervules sometimes projecting more than the rest; anal angle well-marked; inner-margins meeting to form a deep complete groove to a little distance beyond end of abdomen, but thence moderately emarginate and divergent; costal nervure extending to apex; discoidal cell very short, the closing lower disco-cellular nervule long, oblique, very attenuated, joining median nervure at origin of its second nervule; internal nervure extending to end of inner-marginal groove. *Fore-legs* of ♂ conspicuous, brush-like, very densely clothed and fringed with hair (especially on tibia and tarsus); of ♀ similar, but the tarsus with distinct articulations, slightly spinose beneath, and hairy, chiefly on the basal portion. *Middle* and *hind legs* rather long and stout, scaly; tibiæ beneath with a lateral row of strong spines externally, and two rows internally, the terminal spurs long and rigid; tarsi very spinose laterally and beneath; terminal claws stout and curved.

Abdomen short, but rather thick.

LARVA.—Elongate, with numerous rigid spines set with bristles; head and segment next it without spines.

PUPA.—Moderately stout, angulated, tuberculated on back of abdomen; head rather bluntly bifid; ornamented with gilded spots and spaces.

Pyrameis is very closely allied to *Vanessa*, Fab., and by many authors is not separated from the latter genus. The species composing it are, however, of a less robust structure; their wings (especially the hind-wings) are very much less angulated; their palpi not nearly so hairy (particularly as regards the terminal joint); and the colouring and pattern of both surfaces of their wings, prevailing without great modification throughout the group, are altogether different from those exhibited by *Vanessa*. The two sections so well represented by such familiar butterflies as the "Painted Lady" (*P. Cardui*) and the "Red Admiral" (*P. Atalanta*) do not materially differ in markings, their very different aspect being found on close comparison to be owing entirely to the predominance of the black basally in *Atalanta*, and of the red basally in *Cardui*. The under side in *Pyrameis* is of remarkable beauty, and quite unlike that of *Vanessa*, being greatly variegated, marked with submarginal ocelli, and usually intersected by whitish nervures in the hind-wings.

The distribution of the thirteen or fourteen species may be said to include the whole globe, except the extremes of North and South, and a broad equatorial belt in South America; but the only representative in South Africa is *P. Cardui*, the most widely-ranging and generally-distributed of all butterflies. The force of the genus is strikingly illustrated by its prevalence in oceanic islands and the farthest extremities of continents, and especially by its presenting three quite distinct species in a country so exceptionally devoid of butterfly-life as New Zealand.

60. (1). Pyrameis Cardui, (Linn.)

Papilio Cardui, Linn., Syst. Nat., i. 2, p. 774, n. 157 (1767).
Papilio Carduelis, Cram., i. p. 40, t. 26, ff. E, F (1775).[1]
Vanessa Cardui, Godt., Enc. Meth., ix. p. 323, n. 62 (1819).
Cynthia Cardui, Steph,, Ill. Brit. Ent.—Haust., i. p. 47 (1827).
Pyrameis Cardui, Doubl., Gen. Diurn. Lep., p. 105 (1849).
Pyrameis Cardui, Trimen, Rhop. Afr. Aust., i. p. 119, n. 73 (1862).
Aberr.—*Vanessa Cardui*, Herr.-Schäff., Schmett. Eur., i. p. 41, ff. 157–158 (1844).
Aberr.—*Pyrameis Cardui*, var., Trimen, *op. cit.*, ii. p. 335 (1866).

LARVA AND PUPA.
(*European.*) Duponchel, Icongr. et Hist. Nat. des Chenilles, i. p. 107, pl. xii. ff. 42 *a*, *b*, *c* (1849).
(*Javanese.*) Horsf. and Moore, Cat. Lep. E. I. C. Mus., i. pl. v. ff. 3, 3*a* (1857).
(*Cingalese.*) Moore, Lep. Ceyl., p. 51, pl. 27, f. 1*a* (1881).

Exp. al., 2 in. 2 lin.—2 in. 7 lin.

Paler or darker salmon-red, inclining to orange-ochreous, varied with black; apical portion of fore-wing black spotted with white. *Fore-wing:* basal portion blackish, thickly dusted with golden scales; in discoidal cell a short, rather broad, black, transverse mark, the lower edge of which almost touches the upper point of an irregular, angulated, black marking, commencing on inner-margin beyond middle, and thence, arching outwardly, extending along first median nervule into discoidal cell; apical black extending fully half-way along costa, its inner edge forming two deep, irregularly-angulate indentations on the salmon-red ground-colour, and containing an elongate, abruptly-truncate, white stripe from costa, divided into three by nervules, beyond which is a curved row of four white spots from costa to first median nervule, parallel to hind-margin; two rows of lunules along hind-margin, the outer row ochreous, the inner whitish, becoming half obliterated towards anal angle; fringe chequered black and white. *Hind-wing:* costal, basal, and inner-marginal portions broadly blackish, the two latter dusted with golden scales, and inner-marginal region with long, silky, golden hairs; a little beyond middle a transverse blackish stripe, thin near costa, but suddenly thickening on third median nervule, unites costal and inner-marginal blackish; beyond this stripe are three rows of spots parallel to hind-margin,—the first consisting of four or five rounded black spots between nervules,—the second of sub-lunular spots, sometimes contiguous, between nervules (of which the fifth spot, at anal angle, is the largest, and has its outer half pale-blue),—the third of more or less rhomboidal spots *on* nervules, generally united by their lateral angles; fringe as in fore-wing. UNDER SIDE.—*Much paler* than upper side; *the hind-wing exquisitely marbled. Fore-wing:* base and costa whitish, the former with a single blackish dot, the latter with numerous short, minute, blackish, transverse striæ as far as black spot in discoidal cell; salmon-red much paler than on upper side, particularly near hind-margin, but next base *suffused with a soft pale-carmine tint;* a whitish space in cell beyond black spot, and an indistinct greyish-white costal cloud beyond cell, which is closed by a broad black stria; white spots as on upper side, but apical black *replaced by yellow-ochreous,* which extends along hind-margin; two blackish spots on hind-margin close to anal angle; and a more or less distinct row of blackish, outwardly white-edged, lunules parallel to hind-margin. *Hind-wing: varied with white and various shades of yellow-ochreous; nervures white;* a conspicuous white space immediately beyond extremity of discoidal cell; and three irregular whitish markings on costa, two before and one about middle; a transverse, ochre-brown, white-edged mark in discoidal cell; and near it, outside cell, a larger similar mark, divided into three by nervules,—its lower portion on disco-cellular nervule; near, and parallel to hind-margin, a row of five round ocellated spots, situated between nervules from first subcostal to first median, and variously coloured, viz., the first, nearest costa, a simple, ovate whitish spot, containing an ochreous dot; the second, blackish-centred, with sometimes a small blue pupil, ringed with yellow and black; the third and fourth black, with a large metallic-greenish lunule, and ringed with pale yellow; the fifth larger than the rest, with a black, blue-lunuled centre in red, yellow, and black rings; beyond these spots a row of narrow violet-blue lunules, the largest next anal angle and edged with black internally; succeeded by a parallel white stripe; the hind-marginal border yellow-ochreous.

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[1] Cramer states that his specimen came from the Cape of Good Hope. His figure of the under side is not good.

Aberration.—Fore-wing suffused with blackish, to the confusion of the ordinary markings; large apical white spot obliterated; blackish border at anal angle broad and suffused. *Hind-wing: blackish suffusion* over the whole costal region as far as apex; row of black spots faint, whitish-centred; hind-marginal rhomboidal spots not contiguous. UNDER SIDE.—Similarly suffused. *Fore-wing:* large apical spot wanting; anal angle varied with whitish. *Hind-wing:* blackish suffusion obliterating costal and disco-cellular white markings; nervures yellowish-white; first, third, and fourth ocelli whitish, indistinct, merged in a white and greyish band immediately succeeding them.

Hab.—King William's Town (W. S. M. D'Urban).

This aberration closely resembles that figured by Herrich-Schaeffer (*loc. cit.*)

Another aberrant example, taken by the Rev. H. Wilson near Cape Town in 1877, is also very near Herrich-Schaeffer's figure, but differs in having four of the hind-wing spots on the upper side well defined, blackish, with large bluish-white centres (resembling those of *P. Kershawii*, M'Coy, of Australia and New Zealand), and the two largest of the same row on the under side coloured as usual, though not quite complete.

Intermediate between these extreme sports and the normal form are three examples taken at Cape Town in 1866, 1873, and 1874—the first by myself—in which the fore-wing markings are scarcely affected, but the hind-wing spots are minutely ocellate and externally prolonged, so as to be confluent with the succeeding row of lunules.

LARVA.—*Blackish*, with numerous branched *yellow spines;* two faint-yellowish, longitudinal streaks along the back, and a brighter yellow, broader, interrupted stripe on each side above the legs; head black; segment next head not spined, four spines on both third and fourth segments, seven on each segment from fifth to twelfth, four on the last or anal segment; legs reddish-ochreous; under side greyish. 1¾ or 2 inches long. Feeds on thistles, *Malvaceæ*, and other low plants. Mrs. Barber informs me that at Highlands, near Grahamstown, she noticed the principal food-plants of this caterpillar to be *Urtica dioica*, *Malva parviflora*, and *Argyrolobium Andrewsianum*.

PUPA.—*Greyish-ochreous, more or less gilded* on the back and wing-covers; with three rows of brightly-gilded pointed tubercles down the back. Suspended to plants, walls, &c.

This well-known butterfly, the most widely distributed of all existing species, is found in every part of South Africa, but I have nowhere seen it so numerous as at Cape Town. At this place it is *always* to be met with throughout the year, but is more abundant during the warmer months from September to March. I have constantly noticed it sporting about during the fiercest south-east gales, when every other butterfly had long since been driven under shelter. It is probable that this robust indifference to rough weather contributes to some extent to the world-wide prevalence of the insect, which is, however, no doubt mainly due to the polyphagous larvas being principally attached to such universal wayside weeds as thistles, mallows, and nettles. To these considerations must be added its rapid and powerful flight and great activity. It is fond of settling on bare open spots, and when at rest there with completely closed wings, the mottled ochreous and white colouring of the under surface often admirably serves to protect the butterfly from observation. I have more than once seen *Cardui* far out at sea, on one occasion on a ship about ninety miles westward of Teneriffe; and it not only inhabits that island, but is found in the whole series of Atlantic islands, from the Azores to St. Helena.

The immense range of this species was formerly held to be truly cosmopolitan; but Mr. H. W. Bates (*Journal of Entomology*, 1864, p. 181) has recorded that the entire genus *Pyrameis* is absent from the great valley of the Amazons, and also (*teste* W. F. Kirby, *Trans. Ent. Soc. Lond.*, 3d ser., i. p. 488, 1863) that the Brazilian insect often referred to *P. Cardui* is really a variety of *P. Huntera*, Fab., a very distinct member of the genus, extending through the greater part of America generally. We may accordingly be right perhaps in excluding South America proper from *Cardui's* range, although Doubleday (*Gen. Diurn. Lep.*, i. p. 205) mentions the occurrence in Venezuela of a variety named "*Leachiana*, Sommer, MSS." Australia and New Zealand are also now regarded as beyond the limits of true *Cardui*, Professor M'Coy having in 1868 separated as distinct the very closely allied form inhabiting those countries under the name of *P. Kershawii.* This form chiefly differs from ordinary *Cardui* in having three or four of the discal black spots on the upper side of the hind-wings centred with blue; it is also smaller and darker on the under side.

I have not traced the extreme northern range of *P. Cardui;* but Herrich-Schaeffer mentions Lapland as one of its European localities, and Doubleday (who noticed the butterfly by "tens of thousands" in the United States) gives Hudson's Bay in North America. Regarding the Australian *P. Kershawii* as distinct, the Cape of Good Hope is *Cardui's* southern limit. Eastward and westward the butterfly appears to encircle the globe, being as much at home in California as in Algeria, Eastern Asia, and the Sandwich Islands.

Instead, then, of giving the customary list of "localities," it will be sufficient to note that *Pyrameis Cardui* inhabits all the world except the Arctic and Antarctic Regions, South America proper, Australia, and New Zealand, and that it is not only to be found, but is usually numerous, in every part of South Africa.

GENUS EUREMA.

Eurema, E. Doubl., Gen. Diurn. Lep., i. p. 192 (1848).
Hypanartia, Hübn., Samml. Exot. Schmett., vol. i. index (? 1806).
Pyrameis (part), Trimen, Rhop. Afr. Aust., i, p. 117–118 (1862).

IMAGO.—Differs but little from *Pyrameis*, Hübn. *Antennæ* longer; *palpi* more ascendant, not convergent at tips, with terminal joint shorter and blunter. *Fore-wings* with longer costal nervure, and (usually) longer middle disco-cellular nervule. *Hind-wings* with the projection on hind-margin at extremity of third median nervule very marked, forming a shorter or longer "tail;" the projection at extremity of first median also usually marked, though less so than the other; rarely a third sharp projection at extremity of second median; anal angle more or less prominent.

LARVA.—As in *Pyrameis*, but thicker (*E. Hippomene*, Hübn., drawn by Mrs. Barber).

PUPA.—More angulated than in *Pyrameis*, resembling that of *Vanessa Io* and *V. polychloros;* head deeply bifid, the projections very acute; marginal prothoracic ridge with two acute projections; tubercles of two latero-dorsal rows on abdomen elongated into short, acute, broad-based spines, inclining anteriorly (*P. Hippomene*, Hübn.; specimen received from Mrs. Barber).

The butterflies referred to *Eurema* are barely separable from *Pyrameis*, and Doubleday has himself (*loc. cit.*) recorded how very closely they are allied to the Oriental genus *Laogona.* Out of eleven recorded species, seven are American, and the remainder are confined to the Ethiopian Region. The two South-African species are in pattern and marking very like the *Atalanta* section of *Pyrameis*, but they are smaller insects, and the bands are ochre-yellow instead of scarlet or fulvous-red. The tailed hind-wings, however, give them a peculiar aspect, especially in the case of *E. Schœncia*, Trim., a form which appears to be peculiar to South Africa. In flight and habits they resemble *Pyrameis*, but are more partial to wooded spots.

61. (1.) **Eurema Hippomene**, (Hübner).

Hypanartia Hippomene, Hübn., Samml. Exot. Schmett., ii. pl. 25, ff. 3, 4 (1806).
Pyrameis Hippomene, ♀ (*nec* ♂), Trim., Rhop. Afr. Aust., i. p. 122 (1862).

Exp. al., 1 in. 10½ lin.—2 in. 3 lin.

♂ *Brownish-black (darker in apical area of fore-wing); a band of ochre-yellow in both wings; fore-wing with small but conspicuous white spots near apex. Fore-wing:* yellow band obliquely transverse, running from costa before middle (where it is narrowed and tinged slightly with whitish) to inner margin near posterior angle (where it is abruptly narrowed and pointed; inner edge of band slightly indented here and there, its lower portion a little hollowed; outer edge convex throughout; midway between band and apex an oblique costal row of three rather small spots, of which the first (touching the second) is linear and irregular and ochre-yellow, while the others are somewhat rounded and white; parallel to upper half of hind-margin, between costa and second median nervule, a row of six white spots, of which all are minute but the fifth, which is of moderate size and rounded, and the first and second are only separated by a nervule; cilia white, interrupted by broad nervular black spots. *Hind-wing:* yellow band hind-marginal; rather narrower than that of fore-wing, extending from apex to second median nervule, where it abruptly narrows to a point; two parallel lunulated submarginal black lines, all but obsolete where they traverse the yellow band, but thickened and strongly defined between third median nervule and anal angle, in which part the space between them is superiorly ochre-yellow and inferiorly closely irrorated with metallic greenish-blue; a little before these lines, between third and first median nervules, two rather large black ocelli pupilled with shining blue, of which the upper is less distinct, and is bordered by extremity of yellow band, while the lower is marked with a dull-crimson lunule inwardly edging the blue pupil, and is surrounded by a thin outer ochre-yellow ring only distinct on the external side; cilia white with very small black nervular interruptions. UNDER SIDE.—*Beautifully variegated with ochreous-brown, dark-brown, white, metallic-bluish, and bronzy-green; yellow band of hind-wing wanting, that of fore-wing much paler and rather wider. Fore-wing:* costa from base to commencement of yellow band finely striated transversely with bluish-white; in discoidal cell at base a white mark, succeeded by two linear white striæ, and a broader less distinct chestnut-red stria, quite across cell; on costa, just above extremity of cell, a small whitish spot; a little farther on a similar spot commences a thin metallic-bluish line reaching almost to third median nervule and preceded by good-sized subreniform marking formed of metallic-bluish scales; a narrow apical area clouded with pale ochreous-brown; apical white spots arranged as on upper side, but those of oblique costal row all white and united to form an irregular streak, and the third and fourth of the outer row subocellate in thin blackish rings; apical half of hind-marginal border as far as second median nervule ochrey-whitish, traversed mesially by a series of thin sagittate lunules. *Hind-wing:* ground-colour reddish-brown, crossed by three highly-irregular white and bluish striæ, respectively before, about, and beyond middle; the first and second of these striæ commence with a conspicuous whitish costal spot, which in the case of the second (middle) one is much larger and suffused, are thence finely linear and shining-bluish as far as median nervure, whence to inner margin they are widened, interrupted, angulated, and yellowish-white; the third stria is scarcely visible as a brownish line as far as second median nervule, where it suddenly alters like the others, but becomes even more broken and angulated; the first and second striæ are internally, the third externally, bordered by very dark brown; space between second and third striæ very dark brown, irrorated near costa and about middle with bluish, but lower down as far as inner margin densely with creamy-white; in discoidal cell, between first and second striæ, an elongate blackish transverse mark, centred indistinctly with chestnut-red, entirely enclosed by a linear bluish ring; only the lower of the two ocelli well represented, and in a well-defined outwardly black-edged thin yellow ring; a row of four subocellate metallic-green-dusted blackish spots in imperfect yellow rings between the ocellus and first subcostal nervule; position of yellow band of upper side indicated by pale dull ochrey-brown, traversed by two interrupted lunulate blackish streaks; metallic greenish-blue irroration near anal angle much denser than on upper side.

♀ *Like ♂, but ochre-yellow bands paler, rather broader, and white spots of fore-wing a little larger.* UNDER SIDE.—Paler throughout; *the nervures of basal and inner-marginal areas of hind-wing creamy-white.*

LARVA.—Sandy-brown, inclining to ashy dorsally over posterior half; on each segment, except the second and last, two dorsal pairs and one lateral pair of short, black, oblique streaks, all tending to converge posteriorly; of these, the central pair is linear, the next pair thicker, and the lateral pair very thick posteriorly; second segment without markings; last segment with central and lateral streaks only; head ashy-fuscous; spines black; legs and pro-legs grey edged with crimson; a zigzag black spiracular streak. *Second Form.*—White tinged with bluish-grey dorsally; each segment with a very broad central black bar, slightly narrowing inferiorly, and ending quite abruptly just above spiracular line; head black; legs, pro-legs, and spines as in brown form.

Described from drawings by Mrs. Barber of specimens found near Grahamstown. Mrs. Barber wrote that the black-and-white second form was very much rarer than the other, and fed lower down among the branches of its food-plant, and that it always produced the ♀, while the commoner brownish form, she believed, produced ♂s only.

I feel some uncertainty about this case, because at the time the drawings were made I had in error, in my work on *South-African Butterflies*, treated the ♂ *E. Schœneia*, mihi, as that of *Hippomene;* and it seems possible that the differing larvæ might really be those of two distinct species. It is true that *Schœneia* has not hitherto, to my knowledge, been met with near Grahamstown, but it has occurred at the Kowie River-mouth, a distance of under thirty miles.

PUPA.—Ochreous-yellow; a lateral ferruginous brown streak along abdomen from pedicel almost to wing-covers.

Described from a dead specimen forwarded by Mrs. Barber.

This is an active, rapidly-flying insect, having quite the habits of *Pyrameis Cardui* and its congeners. It is fond of settling on flowers in gardens, preferring those of *Lantana.* The male is often to be seen basking on a twig or leaf, especially in open places on the outskirts of a wood, and darting off to pursue the female or a rival of his own sex, only to return to his perch almost immediately. At Highlands, near Grahamstown, I took, on 15th February 1870, a female laying its eggs on a nettle; and Mrs. Barber, who had reared the larvæ, informed me that this plant (*Urtica mitis*) was in that locality the habitual food-plant of the species. The butterfly is on the wing from October to April. It seems to be nowhere abundant, but commoner in some seasons than in others.

Localities of *Eurema Hippomene.*

- I. South Africa.
  - B. Cape Colony.
    - *a.* Western Districts.—Knysna (*Miss Wentworth*).
    - *b.* Eastern Districts.—Port Elizabeth (*J. H. Bowker*). Grahamstown. Bedford (*J. P. M. Weale*). King William's Town (*W. S. M. D'Urban*).
  - D. Kaffraria Proper.
    - Butterworth and Bashee River (*J. H. Bowker*).
  - E. Natal.
    - *a.* Coast Districts.—D'Urban (*J. H. Bowker*). Mapumulo.
    - *b.* Upper Districts.—Pietermaritzburg (*Miss Colenso*).
- II. Other African Regions.
  - A. South Tropical.
    - *bb.* Madagascar.—"Fianarantsoa (*Rev. W. Deans Cowan*)."—A. G. Butler.
  - B. North Tropical
    - *b.* Eastern Coast.—"Abyssinia: Shoa (*Antinori*)."—Oberthür.

62. (2.) **Eurema Schœneia**, Trimen.

PLATE IV., fig. 1 (♂).

Pyrameis Hippomene (Boisd.), Trimen, ♂, Rhop. Afr. Aust., i. p. 121 (1862).

♂ ♀ *Eurema Schœneia*, Trim., Trans. Ent. Soc. Lond., 1879, p. 329.[1]

Exp. al., (♂) 1 in. 11 lin.—2 in.; (♀) 2 in. 3–5 lin.

Brownish-black; both wings with a band of ochre-yellow; the fore-wing with small white spots in apical portion.

♂ *Fore-wing:* band from costal edge a little before middle to inner margin just before anal angle, narrowest on costa and widening downward, slightly arched outward; about midway between band and apex, three small spots form a thin transverse costal streak, the spot on costal edge being ochre-yellow, and the other two spots white; parallel to hind-margin a row of five to six small white spots between costa and second median nervule, the spot next costa germinate; costa from base to ochre-yellow band dull-ferruginous. *Hind-wing:* band hind-marginal, much narrower than that of fore-wing, extending only from apex to third median nervule, traversed longitudinally by an indistinct lunulated ferruginous-brown streak; a little before band two suffused transverse black streaks, convergent, but not extending below third median nervule; anal angle acuminate, and anal-angular portion produced; a long, ferruginous, whitish-tipped tail at extremity of third median nervule; another (not whitish-tipped and only half as long) on first, and an acute dentation on second median nervule; between third and second nervules a very imperfect blue-dotted black ocellus edged outwardly by an ochre-yellow lunule, and immediately below it a similar but almost complete ocellus; close to hind-margin some indistinct black lunulate marks, that at anal angle preceded by a pale-bluish streak. Cilia white between nervures. UNDER SIDE.—*Hind-wing and apical portion of fore-wing variegated with ochreous and ferruginous brown and with lilac-blue irrorations.* *Fore-wing:* band much paler than on upper side, and white on costa; apical white markings as on upper side, but fuscous-edged, the streak from costa wider and immediately preceded by some lilac-blue irroration; in discoidal cell, a black ferruginous-centred spot in a bluish-white ring, and a similarly-coloured transverse bar (touching inner edge of yellowish band) whose white edges are irregularly prolonged below cell to submedian nervure; hind-margin edged with ochreous and ferruginous brown; a lilac-blue submarginal streak, indistinct towards apex, near which it is preceded by three to four lunules of the same colour. *Hind-wing:* a pale-ochreous spot at base enclosing a blackish-centred dull-whitish ocellus in a ferruginous brown ring; the following dark ferruginous-brown markings, viz., one roughly triangular on costa next to basal spot; another elongated and elbowed on costa a little beyond the first; and two in discoidal cell, one basal and circular, the other central and elongated, both ringed with a bluish-white line; defining extremity of cell a similarly-coloured much longer marking, blunt superiorly and pointed inferiorly, crossed by paler nervules; near inner margin on disc much lilac-blue irroration, and a little near costa towards base; beyond middle a very irregular pale-brown streak, bordered on both sides by dark ferruginous-brown, and becoming very zigzag and broken near inner margin; apical hind-marginal region pale-ochrous shaded with brown and glossed with violaceous; submarginal lunules linear, black, edged outwardly with yellow, inwardly with lilac; the ocellate spots imperfect, but beyond and above them much greenish-blue irroration, and immediately before them a strongly-festooned black streak, which becomes ferruginous-brown, and finally obsolete in its extension towards apex.

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[1] Mr. A. G. Butler (*Ann. and Mag. Nat. Hist.*, Ser. V. vol. v. No. 28, April 1880, p. 336) has proposed for Boisduval's *Hippomene* of Bourbon and Mauritius the name of *Hypanartia commixta*, observing that it, as well as the true *Hippomene* of Hübner, occurs in Natal. He thus evidently associates as identical Boisduval's *Hippomene* and my South-African *Schœneia;* but, to judge by Boisduval's figures, the two forms are distinct. However this may be, Mr. Butler's name *commixta* will have to yield precedence to Oberthür's title of *Borbonica*, given to Boisduval's insect in the *Ann. Mus. Civ. d. St. Nat. Genera*, vol. xv., February 1880, p. 36.

♀ Duller and paler than ♂; apical region of fore-wing less produced and blunter, the tails of hind-wing broader and with blunt tips.

Very closely allied to *E. Hippomene* (Hübn.), and to the butterfly described and figured under the same name by Boisduval in his *Faune Entomologique de Madagascar*, &c., p. 43, pl. 8, figs. 3, 4. In outline and marking, *E. Schœneia* would appear, judging from Boisduval's work only (for I have no examples of the Mascarene species), to be more intimately related to Boisduval's insect than to its South-African congener, the true *Hippomene* of Hübner. From the latter, *Schœneia* is best distinguished by (1) *the very much longer (and ferruginous instead of black) tails* of the hind-wings; (2) the narrower (especially in hind-wings) and more deeply-coloured yellow bands; (3) *the two suffused transverse black streaks on disc of hind-wings*, which are wanting in *Hippomene;* and, as regards the under side, by (4) the costa of fore-wing near base being faintly dusted with bluish scales instead of conspicuously barred with whitish; (5) *the decidedly ferruginous and lilac-glossed general colouring;* and (6) the absence in hind-wings of both the costal white patches and the two or more ocelli in superior half of discal region.

The palpi of *Schœneia* are ferruginous beneath, with a pure white edging on the upper-lateral and internal-inferior portions, while in *Hippomene* they are uniformly yellowish-white; above they are fuscous in both species.

Notwithstanding the great difference between this butterfly and the West-African *E. Delius* (Drury) in the pattern and colouring of the upper side (which in *Delius* is dark suffused Indian-red, with broad dusky-brown borders), the under side is almost identical in the two species; except that in *Delius* the pale-yellow bar of the fore-wing is expanded into a wide space reaching almost to base, the ground-colour of the hind-wing is paler, and the cellular spots in both wings are darker. The wings of *Delius* are, however, considerably longer, especially the fore-wings, which are much produced apically.

Localities of *Eurema Schœneia.*

- I. South Africa.
  - B. Cape Colony.
    - *b.* Eastern Districts.—Bathurst: Kowie River (*Plant*). King William's Town (*J. H. Bowker* and *J. P. M. Weale*).
  - D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  - E. Natal.
    - *a.* Coast Districts.—D'Urban (*C. Morland, J. Sanderson, W. D. Gooch*).
    - *b.* Upper Districts.—Pietermaritzburg (*Colonel Scott, R.A.*)
  - K. Transvaal.—Potchefstroom and Lydenburg District (*T. Ayres*).

GENUS JUNONIA.

Junonia (and *Alcyoneis*), Hübn., Verz. Bek. Schmett., pp. 34, 35 (1816); E. Doubl. (Sect. I.), Gen. Diurn. Lep., i. p. 208 (1849).

IMAGO.—*Head* of moderate size, clothed with short hair; *eyes* smooth; *palpi* of moderate length, scaly, clothed with long fine hair above, and very short hair beneath,—terminal joint short, rather wide, moderately acute at tip; *antennæ* short, with a short, blunt, abruptly-formed, spoon-shaped club.

Thorax moderately robust, scaly, with a little scanty hair posteriorly on the back. *Fore-wings* less produced apically than in *Pyrameis*, but otherwise similar in shape, except that costa is more arched; neuration also similar, but middle disco-cellular nervule much longer, and lower one obsolete, leaving discoidal cell quite open. *Hind-wings* as in *Pyrameis*, but anal angle more or less markedly projecting; dentation on first median nervule always more or less prominent, and that on third median sometimes strongly so; lower disco-cellular nervule quite obsolete. *Fore-legs* of ♂ small, slender, thinly set with fine hairs, scaly; of the ♀ but little larger, smooth, scaly, with hairs only on under side of femur.

Abdomen of moderate length, rather slender.

LARVA.—Rather stout, and of nearly even thickness throughout. Head usually bifid superiorly, with a pair of short horns; all the other segments bearing rather short, strong, branched spines.

PUPA.—Thick and rounded, scarcely angulated; head and thorax usually blunted, the former sometimes moderately bifid; dorso-abdominal tubercles small.

Junonia—here restricted to Doubleday's "Section I."—is well characterised structurally by its smooth eyes, short and abruptly-clubbed antennæ, quite open discoidal cells, and fore-legs almost hairless in the

♀, and but moderately hairy in the ♂. The twenty species referable to the group are remarkable for the beauty, and often the large size, of the ocellated spots which adorn the upper side of the wings, and some (among which are the three South-African species) are further ornamented by a blue space or a large blue spot on the hind-wings. On the under side the colouring is remarkably plain and uniform, the hind-wings and apical area of fore-wings being pale-clay colour, inclining to either a yellowish or greyish tinge, with the ocellated spots chiefly obsolete or inconspicuously and imperfectly represented. This under surface here is protective, especially when the butterfly is settled on the ground—a frequent practice of the *Junoniæ*, which are active, alert insects, with the habits of the *Vanessæ* and allies.

The genus ranges throughout the warmer parts of the world (except, apparently, Western Polynesia), but does not enter the Palæarctic Region, except at points along its southern boundary. The greater part of the genus is Oriental and Australian, five (or perhaps six) species are African, and three American. The three natives of Southern Africa are *J. Cebrene*, Trimen, *J. Clelia* (Cram.), and *J. Boöpis*, Trimen. Of these, the first and second have a very wide range through Africa, while the third inhabits Damaraland, the Zambesi Valley, and the Transvaal, extending from the latter country to Delagoa Bay and Natal. *Cebrene* is at once recognisable by the broad ochre-yellow patches on the upper side; *Clelia* and *Boöpis* agree in possessing a creamy-white subapical bar in the fore-wings, but the former has in the hind-wings only a circular blue spot like that of *Cebrene*, while the latter has nearly all the hind-wing surface blue. *Boöpis* is the African representative of the widely-spread Oriental species, *Orithya*, Linn.

63. (1.) **Junonia Cebrene**, Trimen.

♂ *Junonia Œnone*, Hübn., Samml. Exot. Schmett., ii. t. 34, ff. 1, 2 (*nec* 3, 4), (1806).
♂ ♀ *Vanessa Œnone*, Godt., Enc. Meth., ix. p. 318, n. 51 (1819).
„ „ Boisd., App. Voy. de Deleg., p. 592 (1847).
♂ ♀ *Junonia Œnone*, Trim. (part), Rhop. Afr. Aust., i. p. 125, n. 75 (1862).
♂ ♀ *Junonia Cebrene*, Trim., Trans. Ent. Soc. Lond., 1870, p. 353; and Butler (*J. Crebrene*), *loc. cit.*, p. 524.
Junonia Crebrene, Gerst., Gliederth.-Faun. Sansibar-Gebiet., p. 369, n. 17 (1873).

Exp. al., 1 in. 10½ lin.—2 in. 3 lin.

Black; a broad ochre-yellow patch in each wing; in hind-wing, a large, round blue spot.

♂ *Fore-wing:* ochre-yellow patch occupying middle of wing, extending from costa almost to submedian nervure, and from middle of discoidal cell to hind-marginal border, deeply indented with ground-colour both on its upper and lower portion beyond middle,—much paler in its central portion; near apex, on costa, a narrow, pale-yellow, transverse streak joins the large ochre-yellow marking, the point of junction being marked by a more or less apparent black spot, which is sometimes indistinctly ocellate; bordering apical portion of hind-margin three or four sublunular, dusky-whitish marks; cilia brownish, indistinctly varied with whitish. *Hind-wing:* a large, rounded, metallic-blue spot shot with violet-pink near costa about middle, its lower portion in discoidal cell, its upper edge touching costal nervure; beyond it, occupying anal-angular portion of wing, extending along hind-margin to before its middle, and almost to middle of inner margin, a large, ovate, ochre-yellow patch, paler in its central portion; at anal angle, a curved, short, blackish streak, and traces of a lunulate hind-marginal line; cilia as in fore-wing. UNDER SIDE.—Strikingly dissimilar to upper side. *Fore-wing:* black replaced by dull ashy-grey; ochre-yellow patch paler, ill-defined, commencing from base in discoidal cell; costa whitish-grey from base; two pairs of slightly zigzag, transverse, thin, black streaks in discoidal cell, each pair including a whitish-grey space; a sinuate blackish streak, from costa about middle to insertion of second median nervule, marks extremity of cell; apex hoary-grey; the streak joining ochreous patch from costa whitish,—the spot marking point of junction distinct; a blue-pupillate, round, black spot marks the lower indentation of the ochreous patch. *Hind-wing:* hoary-grey; three transverse, brownish, waved, subdentate streaks—one before, the second about, the third beyond, *middle*—the second of which is the most distinct and regular; between the latter and the third a series of small blackish spots between nervules, parallel to hind-margin; ochreous patch very faintly indicated by a slightly yellowish tinge; centre and hind-margin varied with narrow shadings of pale-brown; in some specimens, a narrow, lunulate, brown streak bordering hind-margin; no trace of the blue spot so conspicuous on upper side.

♀ *Ground-colour not so intense a black as in* ♂; the *blue spot in hind-wing smaller and much duller* (*the edges of it not so clearly defined*). *Fore-wing:* basal half of discoidal cell dusted with ochreous scales, and with a short, indistinct, transverse, ochreous streak, situate a little within the large ochre-yellow patch; which latter commences farther from base than in ♂, does not extend so low, is more deeply indented with black both on its upper and lower edge, and contains a transverse black streak which, as on under side of ♂, indicates extremity of discoidal cell; the ocellate spot marking the junction of pale apical streak with ochreous patch more distinct than in ♂, and blue-pupilled; the lower black indentation of the ochreous patch is also marked with a larger ocellate spot, likewise blue-centred. *Hind-wing:* two small black spots, sometimes blue-centred, in ochreous patch, one on its upper edge above discoidal nervule, the other between second and first median nervules; the lunulate streak bordering hind-margin distinctly marked, blackish. *Fringe* of both wings as in ♂, perhaps more distinctly marked with whitish. Under side.—Quite similar to that of ♂, but more distinctly marked; *the hind-wing a little more brownish in tint.*

Larva.—Dull violaceous-grey on back, margined laterally by a broad fuscous stripe, interrupted on segmental incisions; below the fuscous stripe a series of elongate yellowish markings on a ground-colour slightly darker than that of the back; below this the sides are brownish-ochreous. Spines black. Head black, rather bristly, white-spotted in front, with a pair of short divergent horns on summit. Legs and pro-legs dull violaceous-grey.

Described from a drawing by Mrs. Barber, reproduced in Plate I. *fig.* 4. Mrs. Barber informed me that the food-plant of this larva is a purple-flowered species of *Barleria* (Ord. *Acanthaceæ*).

This butterfly is very nearly allied to the well-known Asiatic species *J. Œnone*, Fab., of which it is indeed the African representative. The much more *limited area of ochre-yellow* in both wings, and the *larger, more violaceous, rounder blue spot* in the hind-wings, on the upper side, readily distinguish *Cebrene;* its under side is universally greyer and less ochreous in tint. In the ♂ the *fore-wing* has the ochre-yellow marking paler centrally, not occupying basal area, but commencing at about the middle of the cell, deeply indented by black in costa beyond middle, but not by any disco-cellular terminal streak. The *hind-wing* has the ochre-yellow patch narrower on the inner margin, not extending so far in the direction of the costa; the dark hind-marginal lunular striæ, excepting that at the anal angle, are scarcely traceable, and the basal blue spot is not flattened superiorly. On the under side, the *fore-wing* has the terminal disco-cellular streak thinner and fainter; while the *hind-wing* has the transverse striæ fainter, subdentate instead of sharply crenelate (especially the subbasal and submarginal ones). In the ♀ the *fore-wing* has the ochre-yellow patch still smaller; but the *hind-wing* has it larger than in the ♂, while there is a single well-marked hind-marginal lunulate streak instead of the two (or sometimes three) parallel streaks found in *Œnone.*

The late Mr. F. Walker gives (Newman's *Entomologist*, 1870, p. 51) Madagascar as one of the localities of *Œnone,* but judging from six male specimens from Murundava, on the west coast of that island, in the collection of the South-African Museum, the Malagasy form, though very near *Cebrene*, is quite distinct both from the latter and *Œnone.* As compared with *Cebrene,* it presents the following points of difference, viz., in the fore-wing: (1) The ochre-yellow patch is differently shaped and situated, being vertically deeper, with its inner edge considerably farther from base and much less oblique; (2) in the discoidal cell, thus left almost wholly black, there are two metallic-blue striæ, of which the inner one is usually indistinct; (3) the subapical pale-yellow mark is very small, remote from ochre-yellow patch, and divided transversely. In the hind-wing (4) the blue spot is larger, more metallic, not violaceous, less rounded, being prolonged outwardly on radial nervule; and (5) the ochre-yellow patch is much less rounded, its inner edge being farther from base, and it is also marked externally by two slightly darker streaks running parallel to hind-margin. On the under side, in the fore-wing, (6) the black-edged cellular striæ are strongly defined, that at end of cell being double like the others, which are distinctly bluish; and in the hind-wing (7) the colouring beyond middle is tinged with ferruginous; while (8) the median transverse line is much more irregular and dentated, and bounded externally by a dark ashy-grey stripe, broadest on costa.

Should this form be undescribed, I propose that it should be named *Junonia Paris.*

This beautiful insect inhabits the greater part of South Africa, and is usually numerous in its favourite haunts, which are waste open ground, marshy spots, stubble-fields, &c. It is very active, but frequently settles on the ground and on low flowers. When the wings are closed, the grey under side renders the butterfly very inconspicuous, especially when settled on certain sandy soils, Colonel Bowker observed in Kaffraria that a persistent enemy of *Cebrene* was a small striped lizard, which cautiously stalked and seized the prey, notwithstanding its activity and alertness. "The lizards often hunt in pairs, driving the game from one to the other." I have found this *Junonia* on the wing from the beginning of December to the end of June. During April I have twice seen a worn straggler in Cape Town; but I do not think that the species inhabits the country westward of Swellendam.

Localities of *Junonia Cebrene*.

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Cape Town [occasionally]. Swellendam (*L. Taats*). Knysna. Plettenberg Bay.
    b. Eastern Districts.—Port Elizabeth. Uitenhage (*S. D. Bairstow*). Bathurst; Kowie River (*J. L. Fry*). Grahamstown. King William's Town (*W. S. M. D'Urban* and *J. H. Bowker*). Queenstown; Windvogelberg (*Dr. Batho*).
  D. Kaffraria Proper.—Butterworth and Bashee River (*J. H. Bowker*).
  B. Natal.
    a. Coast Districts.—D'Urban. Verulam. Itongati River. Umhlali River. Umvoti River. Mapumulo.
    b. Upper Districts.—Udland's Mission Station. Little Noodsberg. Greytown. Pietermaritzburg. Estcourt (*J. M. Hutchinson*). Biggarsberg (*J. H. Bowker*).
  F. Zululand.—Isandlhwana (*J. H. Bowker*). St. Lucia Bay (*Colonel H. Tower*).
  K. Transvaal.—Potchefstroom (*T. Ayres*).
  L. Bechuanaland.—Motito (*Rev. J. Frédoux*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—Damaraland (*C. J. Andersson* and *J. A. Bell*). "Angola: Loanda."—A. G. Butler. "Congo: Ambriz (*J. J. Monteiro*)."—H. Druce; and "Kinsembo (*H. Ansell*)."—A. G. Butler.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*). "Mozambique."—Hopffer. "Lake Jipe" [between 3° and 4° S. lat.]—Gerstäcker. "Kilima-njaro (*H. H. Johnston*)."—F. D. Godman [*Œnone*].
  B. North Tropical.
    a. Western Coast.—"Sierra Leone (*Rev. D. F. Morgan*)."—E. Doubleday. "Senegambia."—Gerstäcker.
    b. Eastern Coast.—"Somaliland."—Felder. "Tajora (Straits of Bab-el-Mandeb); Harkeko; Hor Tamanib[1] (*J. K. Lord*)."—F. Walker. "Upper Egypt."—Gerstäcker.

IV. Asia.
  A. Southern Region.—"Arabia (*Ehrenberg* in Mus. Berol.)."—Gerstäcker.

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[1] A ♂ example, ticketed "Hor Tamanib," from Mr. Lord's collection, and presented to me by Mr. R. Meldola, does not differ from the ordinary South-African *Cebrene*.

64. (2.) **Junonia Clelia,** (Cramer).

Papilio Œnone, Linn., Mus. Lud. Ulr. Reg., p. 274, n. 93 (*nec* Var. *Œn.*, p. 275) (1764); and Syst. Nat., i. 2, p. 770, n. 135 (1767).
♂ *Papilio Clelia,* Cram., Pap. Exot., i. t. xxi. ff. E, F (1779).
,, ,, Fab., Ent. Syst., iii. 1, p. 91, n. 285 (1793).
Vanessa Clelia, Godt., Enc. Meth., ix. p. 317, n. 50 (1819).
♂ ♀ *Junonia Clelia,* Trim., Rhop. Afr. Aust., i. p. 128, n. 76 (1862); and ii. pl. 3, f. 7 (♂) (1866); also in Trans. Ent. Soc. Lond., 1870, p. 354.
Junonia Œnone, Gerst., Gliederth.-Fauna Sansibar-Gebiet., p. 369, n. 16 (1873).

Exp. al., 1 in. 11 lin.—2 in. 3 lin.

♂ *Black, with creamy-white markings; a large metallic-blue, violet-glossed spot in hind-wing. Fore-wing:* two dull ferruginous-red transverse streaks in discoidal cell, the outer streak closing cell; a little beyond extremity of cell is a short, slightly-curved outwardly, transverse, creamy-white band, extending obliquely to second median nervule, and divided into five portions by crossing nervules; an irregular creamy-white mark close to hind-margin, between first and third median nervules, almost touches the oblique band, and seems to form a continuation of it; an irregularly-shaped whitish spot close to costa, near apex; beyond it, two lunules of the same colour, slightly below it, which appear to form part of an otherwise almost obliterate row of lunules bordering hind-margin; an ocellate spot, black, with a blue centre, and ringed with ferruginous-red, between first and second discoidal nervules, immediately below subapical white spot, and another similar, rather larger and distincter, ocellus between second and first median nervules, immediately before white mark; fringe brownish black, varied with white. *Hind-wing:* metallic-blue spot occupying the same position as in *Cebrene,* but *larger;* two ocelli like those in fore-wing, one immediately above discoidal nervule, close to blue spot, the other between second and first median nervules, and rather nearer hind-margin; two rows of conspicuous inter-nervular creamy-white lunules, almost contiguous, border hind-margin; fringe white, spotted with black at extremities of nervules. UNDER SIDE.—Very different, *much paler;* the apical portion of *fore-wing* and whole of *hind-wing* being *greyish varied with clay-brown. Fore-wing:* ground-colour blackish; discoidal cell *pale orange-reddish,* crossed by two pale-bluish striæ, edged on both sides with black; a black streak marks extremity of cell, and is outwardly bounded by a bluish one; the three outermost striæ, viz., two bluish and one red, prolonged a little below cell; large creamy-white marks as on upper side, but smaller apical marks obsolete or very indistinct; a thin brownish line from costa close to apex to hind-marginal creamy-white marking; two ocellated spots very indistinct, the upper one sometimes obsolete. *Hind-wing:* an irregular, wavy, brown or ferruginous-brown streak crosses wing, from costa to submedian nervure, before middle; beyond middle, two dentate, brown, transverse streaks, from costal to inner-marginal edge, enclose a pale clay-brown, rather broad band, usually irregularly-varied with dark- or ferruginous-brown, and containing more or less distinct traces of a row of five ocelli, consisting of blackish dots in brown rings, situate between second subcostal and first median nervules; hind-margin bordered with a lunulate line, slightly darker than the ground-colour.

♀ Differs but slightly from ♂; *not so black in ground-colour. Fore-wing:* red striæ in cell paler, duller, but larger and more distinct; two ocelli larger, more conspicuous. *Hind-wing: blue spot not so brilliant,* often *much smaller;* ocellate spots large, very conspicuous. UNDER SIDE.—*Fore-wing:* blue and red transverse streaks crossing discoidal cell prolonged almost to submedian nervure; apical markings more distinct. *Hind-wing:* usually more strongly marked; ocelli in band more conspicuous.

The under-side colouring is subject to much variation, being sometimes pale-creamy or tinged with grey, with the markings very distinct, while other individuals have a faint dull-reddish hue with the markings rather obscure. Specimens, usually females, occur in which a smooth uniform greyish-argillaceous tint prevails, leaving only very faint indications of the characteristic markings.

LARVA.—Dark purplish-grey, with strong, short, steely-blue spines. Head larger than second segment, hairy, deeply notched at vertex, bearing two short horns or processes; a small yellow triangular spot in middle of forehead. Second segment constricted, slightly tufted anteriorly, its lower half bright-yellow, with a yellow spine on each side just above the leg. Third and fourth segments with similar yellow-spines, as well as four steely-blue ones. Fifth to tenth segments each with seven spines, eleventh with eight, four on anal segment. A white interrupted streak above spiracles, from fifth to twelfth segment; behind each spine in the row just above it a round white dot; a narrow lateral white stripe immediately above the legs. Dorsal stripe (of two narrow sinuate lines) darker than ground-colour, but thickly irrorated with minute lighter dots; ring about base of each spine similarly marked. Under side paler. A thick larva in proportion to its length.

PUPA.—Umber-brown, darker on the back. Several of the small pointed tubercular spots on the thorax and abdomen shining-golden in some lights.

Duration of pupal state (January 1870), sixteen days.

The above characters of larva and pupa are drawn up from a description and drawing of Natalian examples made by Captain H. C. Harford. I have also careful pencil-drawings of similar specimens by Mr. W. D. Gooch, in which the head of the larva is represented as smaller than shown by Captain Harford. *J. Clelia* is readily recognised from *J. Cebrene* by its want of the warm yellow-ochreous patches on the upper side. It is more nearly related to *J. Boöpis*, Trim., but is at once distinguished by presenting in the hind-wings only a rounded large blue spot (like that of *Cebrene*) instead of a wide area of blue. The very closely allied form of Madagascar, *J. Epiclelia*, Boisd., is in both sexes much smaller and has the creamy-white markings of the upper side much reduced. In the ♂ the cellular red striæ of the fore-wing are much more distinct, and the blue patch of hind-wing is usually larger, and never violaceous, but pure glittering blue. In the ♀ there is present in the fore-wings a bluish cellular stria between the two red ones; and the blue patch in hind-wings (obsolete in Boisduval's specimen) is much reduced internally, and pale and dull in colour. On the under side, in both sexes, the pale-orange and bluish cellular striæ of the fore-wings are more developed, extending farther below cell.

In connection with these differences it is remarkable to note that the four ♂s and one ♀ brought from the Comoro Islands by Mr. Bewsher are stated by Mr. Butler to be "all quite like Natal examples."

This beautiful species is bold and active like *J. Cebrene*, but shows more preference for wooded than open localities, though by no means keeping among the trees, but courting the full sunshine. It is fond of basking on bare spots of sand or clay. I met with many specimens in Natal from the end of January to the beginning of April, but did not observe it at any considerable distance from the coast. One of the best localities for it was the Botanic Garden near D'Urban. Colonel Bowker sent me the paired sexes taken at Port Natal on 3d November 1878.

Localities of *Junonia Clelia*.

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—Grahamstown. Kleinemond River, Bathurst (*H. J. Atherstone*). King William's Town (*W. S. M. D'Urban* and *J. H. Bowker*).
    d. Basutoland.—Maseru (*J. H. Bowker*).
  D. Kaffraria Proper.—Bashee and Igora Rivers (*J. H. Bowker*). Mouth of St. John's River (*Sir H. Barkly*).
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Itongati.
    b. Upper Districts.—Estcourt (*J. M. Hutchinson*).
  F. Zululand.—Isandlhwana (*J. H. Bowker*). St. Lucia Bay (*Colonel H. Tower*).
  H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).
  I. "Inhambane."—Hopffer.
  K. Transvaal.—Limpopo and Marico Rivers (*F. C. Selous*).
  L. Bechuanaland.—Motito (*Rev. J. Frédoux*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—Damaraland (*J. A. Bell*). "Angola (*J. J. Monteiro*)."—Druce. "Congo: Kinsembo (*H. Ansell*)."—A. G. Butler. Loango: "Chinchoxo (*Falkenstein*)."—Dewitz.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*). "Querimba." —Hopffer. "Bagamoyo (*Raffray*)."—Oberthür.
    *b*1. Interior.—Lotsani and Motloutse Rivers (*F. C. Selous*). "Kilimanjaro (*H. H. Johnston*)."—F. D. Godman.
    bb. "Comoro Islands: Johanna (*W. C. Bewsher*)."—A. G. Butler.
  B. North Tropical.
    a. Western Coast.—Gold Coast (*J. M. Pask*). Sierra Leone (Coll. Brit. Mus.)
    b. Eastern Coast.—"Abyssinia: Shoa (*Antinori*), Massowah (*Raffray*."—Oberthür.

65. (3.) Junonia Boöpis, Trimen.

PLATE IV. fig. 2 (♂).

Junonia Orithyia (Linn.), Wallengr., K. Sv. Vet.-Akad. Handl., 1857, p. 27, n. 1; Trim., Rhop. Afr. Aust., ii. p. 327 (1866).
Junonia Boöpis, Trim., Trans. Ent. Soc. Lond., 1879, p. 331.

Exp. al., (♂) 1 in. 9½ lin.—2 in. 1 lin.; (♀) 2 in. 1–3½ lin.

♂ *Black; hind-wing mostly shining violaceous-blue; fore-wing with subapical creamy-whitish oblique bar. Fore-wing:* costa edged with creamy-white, which is widest and suffused about middle; in discoidal cell two transverse fulvous striæ, of which the outer (marking extremity of cell) is the better marked; between them a blue stria; immediately beyond cell occasionally traces of another blue stria; subapical whitish bar narrow near costa, strongly indented by ground-colour just below second radial, divided into four by crossing nervures,—its two lower and much broader divisions vertically intersected by a more or less suffused black streak; near apex a short creamy-whitish narrow costal bar; between this and the lower part of the subapical oblique bar, a small blue-centred black ocellus in a fulvous ring; a similar, usually rather larger, ocellus (commonly suffused with fuscous) adjoins lower extremity of the oblique bar; between the latter ocellus and inner margin, close to posterior angle, a subquadrate violaceous-blue patch; just before hind-margin two parallel creamy-whitish streaks (of which the outer is very thin and sometimes nearly obsolete), broken into spots by the clouded-blackish nervures, and shot with blue at and a little above posterior angle. *Hind-wing:* blue occupies entire discal portion, infringing a little the outer part of discoidal cell, whose extremity is usually marked by a strong black streak; inner-marginal border fuscous; two ocelli like those of fore-wing on disc, one between second subcostal and radial nervules, the other between first and second median nervules; of these, the upper ocellus is often minute and without the fulvous ring; the two hind-marginal whitish striæ less broken than in fore-wing and preceded by a fuscous one, but much suffused by the discal blue. UNDER SIDE.—*Dull cream-colour. Fore-wing:* basal portion ochre-yellow, which does not reach, however, either costa or inner margin; blue cellular striæ, represented by whitish ones, black-edged on both sides; oblique bar rather paler than ground-colour, strongly black-bordered anteriorly; ocelli ill-defined, their wings much paler, the lower one larger than on upper side; a fuscous space below the latter. *Hind-wing:* two thin, inconspicuous, crenulated, fuscous, transverse streaks from costa to inner margin, one before, the other a little beyond middle; of these, the outer is externally bordered by an ill-defined argillaceous fascia; in discoidal cell two slightly-paler transverse striæ, thinly fuscous-edged; ocelli usually very faintly indicated with fuscous, but between them traces of two other faint ones, and above the second subcostal the indication of a fifth; a fuscous mark at anal angle. In both wings, two parallel submarginal fuscous lines, the outer continuous and lunulated, the inner broken into small cuneiform marks.

♀ *Fuscous; all the ocelli much larger*, but especially those of hind-wings; *blue of hind-wings much smaller in extent, and both duller and paler. Fore-wing:* a minute ocellus usually confluent with the lower edge of upper ocellus, and an imperfect one touching its upper edge. *Hind-wing:* the much-enlarged ocelli have great violaceous centres (often with a white dot in the middle), inwardly bordered with pink and outwardly with black; the upper ocellus commonly includes a minute inferior pupil; above and below the lower ocellus occasionally some black irroration; blue space not violaceous, not infringing on discoidal cell, and much narrower in its superior portion; black pretty evenly occupying almost the basal half of the wing. UNDER SIDE.—As in ♂, but with the markings (especially ocelli of hind-wing) more distinct.

Cilia whitish, varied in fore-wing with fuscous at the extremities of the nervures.

A very close ally of the South-Asiatic *J. Orithyia* (Linn.), but appearing to differ from it constantly in the particulars now to be mentioned. As regards the ♂, *J. Boöpis* has (1) *the narrower sub-apical bar of the fore wings and the adjacent pale markings much yellower in tint;* and (2) the black streak intersecting the lower part of the bar between the two ocelli is never wanting, and usually very strongly marked; while (3) the fulvous striæ and rings of the ocelli are well pronounced; (4) *the blue of the hind-wings,* besides being decidedly violaceous in tint, *occupies a considerably smaller space, being replaced by black in the basi-costal region* to a little beyond the branching of the subcostal nervure; and (5) the under side colouring is duller and more inclining to argillaceous. The ♀ *Boöpis* presents similar differences from the ♀ *Orithyia*, except that the blue of the hind-wings, though deeper in tint, is not violaceous, and, though occupying a smaller space (the basal black being considerably broader), the difference in area is not so marked as in the ♂ s.

Compared with *Orithyia* from Ceylon and Southern India (Bangalore), the ♂ of which expands only 1 in. 8⅓–11 lin., and the ♀ 1 in. 9½ lin.—2 in. 1 lin., *Boöpis* is considerably the larger; but farther eastward, especially in China, the Asiatic species is fully as large as, and even larger than, the African. The wings of the ♂ *Boöpis* are proportionally longer; but I have not seen any specimen in which the fore-wings are subfalcate, as is the case with some of the Chinese examples of *Orithyia*. Hopffer's *J. Orithya* from Querimba (Peters' "Reise nach Mossambique," Ins. and Myriop., p. 380) is probably referable to *J. Boöpis*.

Though recorded by Wallengren in 1857 as among Wahlberg's "Kaffrarian" captures, and though known to me in 1862 as a native of Damaraland and the Lower Zambesi Valley, it was not until 1867 that I knew of the occurrence of this beautiful *Junonia* as far south as Potchefstroom in the Transvaal. In 1872 fine examples from that locality were sent to me by Mr. Walter Morant and Mr. Thomas Ayres, the former of whom wrote that at the end of February the butterfly was plentiful but local on the banks of the Mooi River, and also occurred in January, stragglers continuing to appear in April and May. Near Pretoria Mr. Morant also took an example, in swampy ground, on 28th March.

Colonel Bowker has sent me a single male example, with the information that it was captured on the 27th November 1882 in a footpath at Isipingo, Natal, in company with a number of *J. Clelia.*

Localities of *Junonia Boöpis.*

- I. South Africa.
  - E. Natal.
    - *a.* Coast Districts.—Isipingo (*J. H. Bowker*).
  - H. Delagoa Bay.—Lorenço Marques (*Mrs. Monteiro*).
  - K. Transvaal.—Potchefstroom (*W. Morant* and *T. Ayres*). Pretoria (*W. Morant*).
- II. Other African Regions.
  - A. South Tropical.
    - *a.* Western Coast.—Damaraland (*J. A. Bell*).
    - *b.* Eastern Coast—Zambesi River (Coll. S.-Afr. Mus.)
    - *b*1. Interior.—Mashunaland (*F. C. Selous*). "Victoria Falls of Zambesi (*F. Oates*)."—Westwood.

Genus PRECIS.

Precis, Hübn., Verz. Bek. Schmett., p. 33 (1816); Doubl. ("Junonia, Sect. II."), Gen. Diurn. Lep., i. p. 209 (1849).
Junonia (part), Trim., Rhop. Afr. Aust., i. p. 124 (1862).

Imago.—Most closely allied to *Junonia. Palpi* with second and terminal joints longer; *antennæ* usually longer, with club more gradually formed. *Wings* with hind-margin more dentate; *fore-wings* always more or less angulated at extremity of upper radial nervule, sometimes falcate; prominence at extremity of first median nervule often very pronounced; *hind-wings* sometimes rounded, but more often produced or tailed at anal angle, and in many cases angulated at extremity of third median nervule. *Fore-legs* of ♂ with the tarsi considerably shorter.

Larva.—Set with rather long, rigid, acute, verticillate spines; head with two long, thick, erect, blunt, shortly-branched horns.

Pupa.—Rather robust; head bluntly bifid, the pointed pre-ocular tubercle on each side unequally cleft at tip; thorax with a central dorsal tubercle, a row on each side of three smaller tubercles, and two acute points on each shoulder-ridge; tubercles of three dorsal rows of abdomen large, rounded basally, and pointed; on sides of abdomen two rows of very small tubercles, one above, the other below, spiracles.

(These characters of larva and pupa are given from the skins of those of *P. Octavia*, Cram.; and Captain Harford's description of the larva of *P. Sesamus*, Trim., agrees with what is noted of that state.)

It is very doubtful whether *Precis* is really separable from *Junonia*, some of the few distinctive characters of the imago above given being rather inconstant. The species referred to it have, however, a common and very characteristic *facies*, the usual pattern of the upper side consisting of a rufous or fulvous common discal band, marked with a continuous series of more or less incomplete ocellated spots, on a dark-brown field, while on the under side the basal half is varied with transverse irregular streaks, and the line of the inner edge of the common discal band prominently defined by a strong dark streak, bounded internally or externally by one lighter than the ground-colour. In *P. Octavia* (Cram.) and *P. Cloantha* (Cram.) the red and fulvous-ochreous respectively occupy nearly all the field of the upper side; while in *P. Sesamus* (Trim.) pale-blue occupies as large an area, leaving only a narrow irregular brick-red discal band. In the Indian *P. Hedonia* (Linn.) and allies the discal band is very inconspicuous, but the ocellated spots are very well developed. The latter character is also prominent in the African *P. Cloantha*, a species whose robust body and thick hairy wings remind one of *Vanessa*, and, with its thick, short, and very gradually clavate antennæ, make it rather an aberrant member of the genus.

Precis is a specially African group, twenty-five of the thirty-four recorded species being peculiar to the Ethiopian region. The remainder consist of six Oriental and three Austro-Malayan and Australian species. Of the twelve species known to inhabit South Africa, only two appear to be peculiar to the country, viz., *P. Simia*, Wallengr., and *P. Tugela*, Trim.; four are not known to occur north of the Equator, and the remaining six range through the greater part of the region.

All the South-African species occur in Natal, where the only rarities are *P. Sophia* (Fab.), *P. Simia*, Wallengr., and *P. Tugela*, Trim. Six of them inhabit Kaffraria Proper, and of these four—*Cloantha*, *Sesamus*, *Archesia*, and *Pelasgis*—extend into the eastern districts of the Cape Colony. The George and Knysna districts seem to be the south-western limit of the genus, only *Cloantha* and *Archesia* being known to me to range so far.

I have seen all the South-African forms on the wing except *Sophia* and *Simia*. They are bold and active butterflies, with the habits of *Vanessa* and *Pyrameis*, and, with the exception of *Elgiva* and *Tugela*, seem to prefer open ground, especially the summits and ridges of rocky hills, about which they hover, chasing each other, and frequently settling on stones or on the ground.

66. (1.) **Precis Sophia,** (Fabricius).

Papilio Sophia, Fab., Ent. Syst., iii. 1, p. 248, n. 771 (1793).
,, Donov., Ins. Ind., t. 36, f. 3 (1800) [*teste* W. F. Kirby].
Vanessa Sophia, Godt., Enc. Meth., ix. Suppl. p. 823 (1819).
Junonia (*Precis*) *Sophia*, Doubl., Gen. Diurn. Lep., p. 210, n. 23 (1846–50).

Exp. al., 1 in. 10–11 lin.

♂ *Brown, with pale rufous-ochreous bands;* on hind-margins two parallel, ill-defined, sub-lunulated, brownish-grey streaks, the inner one immediately preceded by a row of indistinct blackish spots. *Fore-wing:* base widely suffused with deep brownish fulvous; immediately beyond discoidal cell a strongly-curved transverse band, convex outwardly, of five or six divisions; two double black striæ across discoidal cell; at extremity of cell a long, oblique, black stria, extending through transverse band to submedian nervure beyond middle; a moderately wide subapical bar of three divisions, irregular, slightly convex outwardly; between lower end of subapical bar and submedian nervure, a row of three indistinct, large, blackish spots. *Hind-wing:* base fuscous, crossed by two waved, short, disco-cellular rufous striæ; a median band quite across wing, rather broad except for a sudden narrowing on costa; between first and second median nervules, the band is externally pierced by a well-marked straight brown streak, and between first median nervule and submedian nervure by a shorter and blunted projection; just beyond band, a row of five to six large blackish spots. Cilia brown, with white inter-nervular interruptions. UNDER SIDE.—Rufous-ochreous of base and bands *replaced by pale whitish-creamy; all striæ and spots very distinct, conspicuous;* along hind-margins, a yellow streak, black-edged on both sides. *Fore-wing:* in discoidal cell, clear-rufous fills the space on each side of the two pale-creamy black-edged striæ; subapical bar suffused externally; between it and apex a minute oblique whitish streak. *Hind-wing:* three highly irregular, basal, transverse blackish streaks, forming a network of markings; two streaks outwardly piercing central band united in an irregular W-like marking, of which the innermost arm is extended as far as the basal marking.

♀ *Similar, paler, the bands broader. Fore-wing:* basal rufous much reduced, and with a fuscous tinge. UNDER SIDE.—Subapical bar of *fore-wing* and central band of *hind-wing* widely suffused externally, so as to occupy the greater part of hind-margin.

VAR. (♂).

Fuscous, with the ordinary transverse band common to both wings, and the subapical bar of fore-wing white and somewhat narrowed. Under side normal.

Fore-wing elongated in apical, hind-wing in anal-angular portion.

This curious variety is represented in the British Museum by an example from Fernando Po, and in the South-African Museum by one taken on the Gold Coast by Mr. J. Morton Pask, of H.M.S. *Druid.* One is reminded by it of the singular seasonal form *Prorsa* of the European *Araschnia Levana* (L.) The elongation of the wings, combined with the fuscous and white colouring, give it much the appearance of a small *Neptis*.[1]

The only South-African specimen of this butterfly that I have seen is a ♀ sent to me by the late Mr. E. C. Buxton in 1874, with the note that it had been captured at D'Urban, Natal, in the previous year, and was the only individual met with. This example agrees in all respects with specimens from Tropical Western Africa.

Localities of *Precis Sophia.*

- I. South Africa.
  - E. Natal.
    - *a.* Coast Districts.—D'Urban (*E. C. Buxton*).
- II. Other African Regions.
  - B. North Tropical.
    - *a.* Western Coast.—Fernando Po (Coll. Brit. Mus.) Gold Coast (*J. M. Pask*). Sierra Leone (Coll. Brit Mus.)
    - *b.* Eastern Coast.—"Abyssinia: Lake Tsana (*Raffray*)."—Oberthür.

67. (2.) **Precis Cloantha**, (Cramer).

♀ *Papilio Cloantha*, Cram., Pap. Exot., iii. t. cccxxxviii., ff. A, B (1782).
♀ *Vanessa Cloantha*, Godt., Enc. Meth., ix. p. 322, n. 61 (1819).
♂ ,, ,, Chenu., Enc. d'Hist. Nat.-Pap., pl. 26, f. 3 (1852).
♂ ♀ *Junonia Cloantha*, Trim., Rhop. Afr. Aust., i. p. 137, n. 83 (1862).

Exp. al., 2 in. 3–9½ lin.

Brighter or duller warm orange-ochreous; with transverse black streaks, and blue-centred black ocelli.

♂ A *splendid purple lustre,* strongest over basal half of wings, is visible in certain lights. *Fore-wing:* base clouded with black, narrowly so on costa, more widely on median nervure, and extending nearly to middle on inner margin; two moderately-broad, transverse, black streaks in discoidal cell, the outer one closing cell; a similar streak beyond middle, between subcostal nervure and third median nervule, which, interrupted on the *latter* nervule, is continued thence by an irregular streak, inclining inwardly, to submedian nervure, where it joins the black clouding from base; in some distinctly-marked specimens, the streak closing cell is also, though interrupted at insertion of second median nervule, produced to join basal black; beyond the striæ a black mark on costa commences a row of six black, blue-centred ocelli, of which the first three are contiguous, the largest and lowest ocellus being between second and first median nervules,—the line of spots being parallel to hind-margin; beyond ocelli a transverse, thin, interrupted, macular, black streak, broader and more continuous on costa and close to anal angle; costa and hind-margin closely hatched with very thin, minute, short, transverse lines; occasionally this hatching is wanting on hind-margin, when there is an irregular black streak closely bordering hind-marginal edge. *Hind-wing:* more or less broadly clouded with black at base, the black occupying most of discoidal cell, at extremity of which is a subovate black spot; this spot is occasionally united to basal black by a thin black line along discoidal nervule; near and parallel to hind-margin a row of six ocelli similar to those of *fore-wing*, but much larger (except the ocellus next anal angle, which is always small, and sometimes very minute), situate between nervules from first subcostal to submedian nervure; macular streak of fore-wing continued across this wing in a more lunulate form, dusted with bluish scales, and ending in a thickly blue-dusted mark at anal angle; specimens possessing the exterior hind-marginal streak in *fore-wing* have it likewise bordering hind-marginal edge of hind-wing. Cilia of both wings hoary-greyish, with tufts of longer hairs on dentations of hind-wing. UNDER SIDE.—*Paler or darker dull ochreous-brown* (*rarely pale greyish-ochreous*), the markings of upper side narrowly and faintly reproduced in *slatey-black*. *Fore-wing:* no basal black; some short, strong, *pale-yellowish hairs* on costa near base; stria in discoidal cell *outlined* only with slatey-black, but darker than ground-colour, ocelli mostly indistinctly marked, *not* blue-centred, but with *a few, minute, pale-yellowish hairs springing from their centres;* at anal angle, and more rarely at apex, is a whitish-violaceous tinge. *Hind-wing:* a small slatey-black spot in discoidal cell; an irregularly-waved slatey streak, crossing wing before middle, closes cell; a similar, but more regular stria beyond this, and continuous of the third stria in fore-wing, extends nearly to anal angle; ocelli very indistinctly defined, much smaller than on upper side, rather conspicuously tufted in their centres with pale-yellowish hairs; similar, but longer, hairs are scattered over base and margins of wing, but are most abundant and longest on *inner marginal portion covering abdomen;* a bluish tinge at anal angle.

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[1] M. Oberthür mentions (*Études d'Ent.*, iii. (Oct. 1878), p. 27) that this variety occurs, and that some examples exhibit the passage between the different colorations. He does not say, however, whether the variety in question obtains in the female as well as in the male.

A specimen with very pale under side, in my collection, has the *ocelli* much distincter and bluer than above described, without any hairs in their centres; these hairs are indeed almost universally wanting, except a few near bases of wings.

♀ *Without* the rich purple lustre of ♂; but markings quite similar to those of the other sex. Ocellate spots in both wings larger, and, as a rule, comparatively with *more blue*. UNDER SIDE.—Quite like that of ♂.

This species is very variable as regards both depth of colouring and intensity of marking. The ocelli of hind-wing are particularly so, being in some specimens so enlarged as to form a broad continuous submarginal band.

In its robust structure and thick, partly hairy wings, no less than in its colouring, this *Precis* is not at all unlike that section of the allied genus *Vanessa* which is represented by the well-known *V. Polychloros* (Linn.)

I am informed by Mrs. Barber that the larva feeds on "a large brown-coloured species of *Gomphocarpus*, which grows in wet or swampy spots among long grasses or sedges;" but I have not received any drawing or description either of it or of the pupa.

P. Cloantha is a widely-spread species in the eastern parts of South Africa, but I am not aware of its occurrence westward of George in the Cape Colony. It is on the wing from the end of September to the beginning of April, but is most numerous in January and February. It frequents open ground, preferring damp marshy places with much grass, either in valleys or hollows on hillsides. I have seldom noticed it on flowers; it usually settles on the ground or on the lowest plants, and when basking with expanded wings in the sunshine, is a most conspicuous and beautiful object. It has all the activity of the *Junoniæ* and *Vanessæ*, and is, I think, even bolder than they in returning to the same spot after an unsuccessful attempt at its capture.

Localities of *Precis Cloantha*.

I. South Africa.
  A. Cape Colony.
    a. Western Districts.—George (*W. Atmore*). Knysna. Plettenberg Bay.
    b. Eastern Districts.—Uitenhage (*S. D. Bairstow*). Kowie River, Bathurst (*J. L. Fry*). Grahamstown. King William's Town (*W. S. M. D'Urban*). East London (*P. Borcherds*).
    d. Basutoland.—"Maluti Mountains" (*J. H. Bowker*).
  D. Kaffraria Proper.—Butterworth and Bashee River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Itongati River. Mapumulo.
    b. Upper Districts.—Udland's Mission Station. Fort Buckingham, Tugela River. Greytown. Little Noodsberg. Intzutze, Great Noodsberg. Maritzburg (*Miss Colenso*). Estcourt (*J. M. Hutchinson*).
  K. Transvaal.—Potchefstroom (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—Angola: "Loanda (*R. Meldola*)."—A. G. Butler.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*).
    *b*1. Interior.—"Victoria Nyanza (*Rev. J. Hannington*)."—A. G. Butler.
  B. North Tropical.
    a. Western Coast.—Cape Palmas (Coll. Hope Mus.)
    b. Eastern Coast.—Abyssinia: "Shoa (*Antinori*)."—Oberthür.

68. (3.) **Precis Ceryne**, (Boisd.)

Salamis Ceryne, Boisd., App. Voy. de Deleg., p. 592, n. 68 (1847).
Junonia Ceryne, Trim., Rhop. Afr. Aust., i. p. 131, n. 78 (1862), ; and ii. pl. 3, f. 4 (1886) [♂].

Exp. al., 1 in. 11 lin.—2 in. 2 lin.

♂ *Brown; a broad, pale-ochreous, reddish-tinged band crossing both wings, and in hind-wing whitish on its inner side. Fore-wing:* two short, pale-ochreous striæ cross discoidal cell, the outer of the two extending a little below median nervure and its first nervule; the broad pale-ochreous band, tinged with reddish *externally*, occupies wing from about middle, is bifid on costa, being divided by a brown, curved mark, containing a row of four white spots; this row of spots continued towards inner margin by three small black spots *in* ochreous band; a row of eight small blue crescents along brown hind-margin; fringe brown, spotted with white; a thin indistinct transverse bluish streak just beyond extremity of cell, and a minute bluish spot in cell close to base. *Hind-wing:* ochreous band of *fore-wing* continued across this wing to inner margin before anal angle, and containing a row of five black spots; blue crescents and fringe as in *fore-wing;* usually a pale-yellowish spot near base, close to costa, and another in discoidal cell towards extremity. UNDER SIDE.—*Deep, rich ochre-yellow. Fore-wing:* transverse striæ in discoidal cell white margined with black; broad band *white on its inner edge*, which is also bordered with black; spots in band all or mostly *white-centred;* hind-marginal crescents *white,* instead of blue, finely edged with black on both sides, and immediately succeeded by a parallel row of white lunules without black edges; a black line along hind-marginal edge. *Hind-wing:* two white black-ringed spots near base; band as in fore-wing, but its black spots *not* white-centred; hind-marginal crescents, row of lunules, and black edging line as in fore-wing.

♀ Band common to both wings much broader, more rufous, not so much inclined to whitish on its inner side; all the markings clearer and brighter than in the ♂. UNDER SIDE.—As in ♂, but redder near hind-margins.

A female taken at D'Urban, Natal, in 1878, by Colonel Bowker, has the under side much obscured, the ground-colour inclining to ferruginous, and the white of the band and basal markings replaced by ochre-yellow. This specimen in these respects much resembles the very closely allied *P. Tukuoa*, Wallengr.

In March and April 1867 I met with this gaily-coloured species pretty frequently in different parts of Natal. It is fond of open country, especially of grassy valleys in uplands, seeming to prefer the vicinity of streams. It is active, but not swift on the wing, and settles very frequently.

Localities of *Precis Ceryne.*

I. South Africa.
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban. Itongaati River. Mapumulo.
    b. Upper Districts.—Udland's Mission Station. Hermansburg. Greytown. Great Noodsberg. Maritzburg. Karkloof (*J. H. Bowker*). Estcourt (*J. M. Hutchinson*).
  F. Zululand.—Napoleon Valley (*J. H. Bowker*).
  K. Transvaal.—Pretoria (*W. Morant*). Lydenburg District (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola (*J. J. Monteiro*)."—Druce.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*).

69. (4.) **Precis Tukuoa,** (Wallengren).

Salamis Tukuoa, Wallgrn., K. Sv. Vet.-Ak. Handl., 1857; Lep. Rhop. Caffr., p. 25, n. 6.
Junonia Pelarga, Fab., Syn. ♂, Trim., Rhop. Afr. Aust., ii. p. 337 (1866).

Exp. al., 1 in. 11 lin.—2 in. $3\frac{1}{2}$ lin.

Brown, with a common fulvous-ochreous discal band, bifid in fore-wing, and in hind-wing more or less tinged with dull creamy on its inner portion. Fore-wing: costa rufous-ochreous from base to extremity of discoidal cell; across cell two short broad fulvous-ochreous stripes, the outer of which extends below cell, where it is crossed by base of first median nervule; in cell, the spaces before, between, and beyond the fulvous-ochreous stripes are rather indistinctly bluish with blackish edges; just beyond extremity of cell a short, angulated, transverse black streak, immediately succeeded by a rather suffused blue one; discal band bifid from third median nervule, and partly traversed by three spots of a row of seven parallel to hind-marginal border; of these spots, the dark rings of the upper four are merged in the ground-colour between the arms of the discal band, the first having a blue suffused centre, while the other three have well-defined pure-white centres (that of the third spot the largest),—the fifth and sixth are without centres, and the last (which is double) has a minute white centre in its larger upper portion; inner half of moderately wide brown hind-marginal border traversed by a row of rather faint and suffused black-edged bluish lunules,—outer half externally edged with a blackish line. *Hind-wing:* near base two small fulvous-ochreous spots, one between costal and subcostal nervures, the other in discoidal cell; five small black spots in the row traversing discal band, between first subcostal and first median nervules,—the second spot occasionally (and very rarely the third also) with a minute white centre; hind-marginal border as in fore-wing, except that at anal angle the last blue lunule of inner portion is larger and brighter than the rest, and joins on the anal-angular process a similar outer lunule. Cilia brown, with whitish inter-nervular interruptions. UNDER SIDE.—*Dull reddish-ochreous, much shot with violaceous; a common narrow median yellow stripe, externally dentated;* the markings of the upper side faintly indicated by corresponding outlines of slatey-grey. *Fore-wing:* transverse cellular stripes indicated by a paler, yellower colour; the three white-centred spots of upper side represented by impure-white spots in rufous-grey rings; a slight hoary irroration at apex. *Hind-wing:* a similar irroration about anal-angular process.

The sexes do not differ in appearance, except that in the ♀ the wings are broader and less angulated, and the common discal band is markedly wider, and of a duller, deeper fulvous.

Notwithstanding the much more angulated wings—the fore-wings are indeed falcate—and the dull-coloured, little-varied under side, *Tukuoa* is undoubtedly a very close ally of *Ceryne*, Boisd., every marking actually corresponding in outline and position in the two forms. On the upper side *Tukuoa* wants, or only slightly presents, the pale suffusion of the inner part of the common discal band; in the fore-wing, the centre of the first spot in the discal row is blue (not white), and the bluish scaling in the discoidal cell is more pronounced. The cilia are much narrower, and faintly (instead of very conspicuously) varied with white. On the under side the conspicuous ochre-yellow ground-colour and white black-edged markings of *Ceryne* are obliterated, only their outlines being indicated in grey; while the narrow median yellow stripe (corresponding to the inner part of the discal band of *Ceryne*) is externally sharply dentated.

In station and habits there seems to be nothing to distinguish this species from *P. Ceryne*, but it is apparently scarcer. In March and April 1867 I took several specimens at Natal in three different localities, all of which were frequented by *Ceryne;* and in one (Tongaati River) the two forms were flying together about the same spot. As I at that time did not regard *Tukuoa* as a distinct species from *Ceryne* (and indeed had not identified the butterfly with Wallengren's insect), it is not unlikely that I may have passed it over at several of the other localities I visited.

Localities of *Precis Tukuoa.*

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban. Pinetown (*W. Morant*). Itongaati River.
    b. Upper Districts.—Great Noodsberg.
  F. Zululand.—St. Lucia Bay (*H. Tower*).
  K. Transvaal.—Lydenburg District (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*).
    *b*1. Interior.—Mashunaland (*F. C. Selous*).

70. (5.) **Precis Simia**, Wallengren.

Precis Simia, Wallgrn., K. Sv. Vet.-Ak. Handl., 1857; Lep. Rhop. Caffr., p. 26, n. 2.
Junonia Octavia, Cram., ? Var., Trim., Rhop. Afr. Aust., ii. p. 335 (1866).

Exp. al., 1 in. 10 lin.

Fulvous-ochreous, with fuscous borders, spots, and basal clouding. Fore-wing: costal border narrowly fuscous, traversed by a fulvous streak near base and a little beyond middle; basal part of inner-marginal area irrorated with fuscous almost to middle; base of cell and middle part of a black-edged cellular transverse stria irrorated with fuscous; immediately beyond cell a broad irregular fuscous fascia, angulated externally between second and third median nervules, enclosing an irrorated ill-defined traversing stripe of the ground-colour; and becoming indistinct near inner margin; a little before apex a short oblique fuscous bar, uniting with the upper part of hind-marginal border to isolate two small spots of the ground-colour; a curved discal row of four round fuscous spots between end of oblique bar and submedian nervure; hind-marginal border traversed by two very indistinct parallel rows of paler lunules, of which the inner are slightly bluish-tinged. *Hind-wing:* basal fuscous very broad (especially along costa, where it almost reaches hind-marginal fuscous border), marked with a whitish-fulvous spot between costal and subcostal nervures, and with a large fulvous space (outwardly connected with ground-colour) in outer half of discoidal cell; discal waved row of five spots, smaller than in fore-wing; hind-marginal border considerably wider than in fore-wing, its inner edge irregularly and bluntly dentated, its two rows of lunules almost as indistinct as in fore-wing. Cilia fuscous, with inter-nervular white spots. UNDER SIDE.—*Paler, the ground-colour tinged with whitish; basal fuscous and its included markings of the ground-colour very distinctly defined;* the lunules of hind-marginal border much whiter and distincter than on upper side. *Fore-wing:* basal fuscous not irrorated with fulvous, its external edge only bluntly angulated, containing a basal and a terminal disco-cellular bar (the latter narrowly continued to submedian nervure), and an irregular thin streak beyond cell; fuscous costal bar near apex obsolete, so that first and second spots of discal row are distinct. *Hind-wing:* basal fuscous much narrower on costa, extending only slightly beyond middle; disco-cellular markings corresponding with those of fore-wing, but smaller and whiter; spot between costal and subcostal nervures near base large and conspicuous; immediately above it a small indistinct fulvous spot; curve of costa at base bordered with fulvous; a sixth spot near costa in discal row.

As above stated, I formerly referred *Simia*, Wallengr., with doubt to *Octavia*, Cram., judging from the author's description only. But in November 1881 I received a very carefully coloured drawing of Wallengren's type (most kindly procured for me by M. Aurivillius, of the Royal Stockholm Museum), and on my return to the Cape found a worn specimen of *Simia*, which had been sent to the South-African Museum by Colonel Bowker. A comparison of this specimen with the drawing and with Wallengren's description has convinced me that the latter author was justified in separating this butterfly from *Octavia*. Its small size and duller, more fulvous colour distinguish it widely in appearance from the southern examples of *Octavia*, but it is much more like the West-African type-form. As regards the upper side, the wider extension of the basal fuscous, and its fulvous irroration and singular external angulation in the fore-wing, together with the narrower hind-marginal border, are distinguishing marks of *Simia;* and, on the under side, the entire basal field of fuscous completely enclosing all the ground-colour markings, *but wanting the two conspicuous basi-costal pale spots of Octavia*, as well as any trace of the blue irroration, are characters by which the butterfly can well be recognised.

Colonel Bowker's specimen of this apparently very rare species is a ♂, and was taken in the Park at D'Urban, Natal, in June 1881. I sent a drawing and note of the insect to that excellent observer; but he has not again met with an example.

Localities of *Precis Simia.*

- I. South Africa.
  - E. Natal.
    - *a.* Coast Districts.—D'Urban (*J. H. Bowker*).

71. (6.) **Precis Octavia,** (Cramer).

Papilio Octavia, Cram., Pap. Exot., ii. t. cxxxv. ff. B, C (1779).
Vanessa Octavia, Godt., Enc. Meth., ix. p. 322, n. 60 (1819).
,, ,, Angas, Kafirs. Illustr., pl. xxx. f. 8 (1849).
Precis Octavia, Hübn., Verz. Bek. Schmett., p. 33, n. 274 (1826).
Junonia Octavia, Trim., Rhop. Afr. Aust., i. p. 130, n. 77 (1862).

Exp. al., 2 in. 2 lin.—2 in. 8 lin.

Salmon-red, inclining to brick-red, with black borders and spots. Fore-wing: base rather broadly blackish, especially on inner margin, where it extends as far as middle; costa bordered with black, narrowest about middle, becoming broad and suffused before apex; a broad, black, transverse stria in discoidal cell unites costal and inner-marginal *black*, leaving a spot of ground-colour between it and base; a similar, more waved, rather narrower streak occupies extremity of discoidal cell; a moderately-broad black border along hind-margin, containing two rows of small bluish lunules, the outer row generally ill defined, the inner almost always distinct; immediately beneath, and united to, apical black is the first of a discal row of six round black spots, between nervules, from fifth subcostal nervule to submedian nervure; fringe black, conspicuously spotted with white. *Hind-wing:* disc with a pink gloss; base broadly blackish, extending in a broad band to middle of costa, where it ends abruptly, immediately below the termination of the inner-marginal black in *fore-wing*, occupying inner half of discoidal cell, and extending, rather suffusedly, to about middle, between first median nervule and submedian nervure; a black streak, sometimes united to costal black, at extremity of cell; along hind-margin, a black border similar to that in *fore-wing*, but broader,—its two rows of bluish lunules usually more distinct than in fore-wing; an irregular transverse discal row of six round black spots, continuous of that in fore-wing, extending from costa to first median nervule; towards inner margin is a clothing of silky ochreous hairs; fringe as in *fore-wing*. UNDER SIDE.—*Much paler, more creamy in tint, shot with glistening pink;* black markings very similar to those of upper side. *Fore-wing:* a tinge of *pale-yellow* on costa, particularly near apex, where there is *no* broad blackish suffusion, but sometimes a faint fuscous cloud; the row of spots parallel to hind-margin commencing distinctly *from costa*, the first spot increasing the number to seven; double row of bluish lunules more conspicuous than on *upper side*, whiter. *Hind-wing:* basal black *containing four rather large, very conspicuous spots of the ground-colour*, and dusted with blue scales, which form a transverse streak between costal and subcostal nervures near extremity of black; whitish-bluish lunules in hind-marginal border large and very conspicuous; row of black spots as on upper side; inner-marginal region stained with *ochre-yellow*.

The sexes do not differ except in the larger size and broader, more rounded hind-wing of the ♀.

Larva.—(Cast skin of final moult.) Apparently wholly black, except the head, which is shining yellowish-brown, with a central arrow-head black mark in front and a conspicuous rounded black spot on each side. Spines of the body very acuminate, set with whorls of strong acicular bristles; the pair on the summit of the head also black, very thick and long, blunt and rounded at the tips, quite erect, bearing short, stout, thorn-like branches throughout.

Pupa.—(Cast skin.) Pale yellowish-brown, mottled irregularly with darker-brown on abdomen generally and on back of thorax; three darker-brown sub-quadrate spots on wing-covers near base.

Colonel Bowker reared a specimen of *Octavia* at Pinetown, in Natal, in October 1883, and sent me the *exuviæ* above described, with the note that the duration of the pupal state was twelve days. As far as can be judged from the shrivelled skin, the larva must closely resemble that of *P. Sesamus,* described by Captain Harford.

The much larger size and brighter, clearer red of the Southern examples give them a very distinct look from the Tropical West-African type-form, which also in fore-wing has the discal row of black spots less curved inwardly, and in both wings on upper side the rows of bluish lunules almost obsolete. But, on a close comparison, I have not judged it advisable to separate the Southern form as a distinct species, though it certainly constitutes a marked variety.

I found this beautiful *Precis* widely spread over Natal in the summer of 1867, but did not notice it near D'Urban. It frequents open, grassy hills, especially their summit ridges or highest points, and is very conspicuous, whether flying or settled. Its companions on these exposed spots are usually its own congeners, *P. Sesamus, Archesia,* and *Pelasgis,* though the last-named species often prefers a station on the edge of a wood. All are active, bold butterflies, and their size and striking colouring give much animation to their favourite haunts.

While in Natal, I captured, near Verulam, on 25th February 1867, a very fine example of what I took to be a dark example of *Octavia,* but which, on examination, exhibited manifest indications of an approach towards the characters of *P. Sesamus.* I have had this example figured (see Pl. IV. fig. 4), and it will be observed that the basal black is much more developed than usual, and in the fore-wing is irrorated with blue; that a black-edged blue stria crosses the discoidal cell of the fore-wing, while a triple blue and black striated marking occupies the extremity of the cell; that the two upper spots of the discal row in the fore-wing, which in *Sesamus* are white-centred, are centred with whitish-blue; and that the under side presents, immediately beyond the ordinary basal markings, an irregular fuscous bluish-varied stripe, corresponding in position to the similar marking in *P. Sesamus.* I saw a second individual of apparently quite the same pattern in the Umvoti District during the following March, but did not succeed in capturing it.

These two butterflies recalled to my mind two singular specimens taken by Colonel Bowker on the Tsomo River, Kaffraria, in December 1865, which presented in the main the characters of *Sesamus,* but with a very decided inclination in the direction of *Octavia.* To these latter specimens I shall revert under the heading of *P. Sesamus.*

It was not until 1879 that I found, in the fine collection acquired from Mr. T. Ayres for the South-African Museum, two examples from the Lydenburg District of the Transvaal which closely resembled my Natal example; but in the absence of any basal blue irroration, and in having only faint traces of blue in the cellular striæ, showed less divergence from *Octavia*. The larger of the two, however, had the two upper spots of the discal row of fore-wing as conspicuously white-centred as in *Sesamus;* and also exhibited a very dark under side, the basal half being very completely fuscous with a sharply-defined and dentated outer limit, while the hind-marginal area had a distinctly bronzy suffusion.

These exceptional variations, together with those of *Sesamus* already referred to, acquired a special interest in the same year (1879), as Mr. Frank N. Streatfeild, C.M.G., an experienced collector and observer of Lepidoptera, wrote to me to announce that he had just captured at Ibeka, in the Trans-Kei Territory, *Octavia* and *Amestris* (*Sesamus*) *in copulâ*. He wrote, "There was no mistake about it; I caught, killed, and pinned them in my box (with the intention of sending them to you) still *in copulâ. . . . Amestris* was flying and *Octavia* passive while the two paired butterflies were on the wing." The voracity of the ants frequenting Mr. Streatfeild's hut unfortunately did not spare these most interesting specimens, which were devoured the very night after their capture. This testimony from so good an authority is of special value, as I had not communicated my suspicions on the subject to Mr. Streatfeild, nor was he at the time aware of my having any specimens pointing to intercourse between the two species. It is only to such occasional unions, and to their fertility, that the origin of the intermediate examples under notice can be attributed.

Localities of *Precis Octavia*.

I. South Africa.
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker*). Mouth of St. John's River (*Sir H. Barkly*). "Ibeka" (*F. N. Streatfeild*).
  E. Natal.
    a. Coast Districts.—Verulam. Umvoti. Mapumulo.
    b. Upper Districts.—Intzutze River. Little Noodsberg. Great Noodsberg. Udland's Mission Station. Fort Buckingham. Hermansburg. Greytown. Pietermaritzburg (*W. Hayes*). Estcourt (*J. M. Hutchinson*). Karkloof (*J. H. Bowker*). Van Reenen's Pass, Drakensberg (*C. Hart*).
  K. Transvaal.—Lydenburg District (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola (*J. J. Monteiro*)."—Druce.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*).—Coll. Hope, Oxon. [Austral form].
  B. North Tropical.
    a. Western Coast.—Sierra Leone (*A. N. Innes*).
    b. Eastern Coast.—"Abyssinia: Shoa (*Antinori*)."—Oberthür.

72. (7.) **Precis Sesamus**, Trimen.

Plate IV. fig. 3 (♀).

Vanessa Amestris, Boisd., App. Voy. de Deleg., p. 592 (1847).
" " Wallgrn., K. Sv. Vet.-Ak. Handl., 1857; Lep. Rhop. Caffr., p. 26 (1857).
Junonia Amestris, Dru. [*part*], Trim., Rhop. Afr. Aust., i. p. 132, n. 79 (1862).

Exp. al., 2 in. 5 lin.—2 in. 11 lin.

Black, dusted with violaceous-blue, and with blue transverse bands; a transverse band of red spots near hind-margin. Fore-wing: thickly irrorated with blue as far as middle; in discoidal cell the irrorations form three transverse striæ, separated from each other by streaks of the black ground-colour; a waved, irregular, at third median nervule sometimes interrupted, blue stripe crosses wing beyond middle, from costa to inner margin; beyond it commences a transverse row of six spots parallel to hind-margin, the first two spots being conspicuously *bluish-white* and of small size, the remainder *red* (the first of which is small, the other three large, and excavate *internally*, where each is marked by a deep-black spot); beyond this row is another of blue sub-lunulate spots; a line of thin blue lunules close to hind-marginal edge; fringe black, white-spotted in indentations. *Hind-wing:* basal area dusted with blue; *no* striæ in discoidal cell; beyond middle, the blue and red stripes of *fore-wing* are continued across this wing to inner margin before anal angle, the *blue* stripe becoming indistinct in its lower portion, the *red* consisting of seven conspicuous, internally black-dotted spots; row of lunulate spots and of hind-marginal lunules as in *fore-wing*, but *larger;* fringe white-marked in indentations. UNDER SIDE.—*Glossy dark greenish-bronze, with transverse blackish striæ. Fore-wing:* five sinuate, black transverse striæ in discoidal cell; a dull-blackish, ill-defined fascia just beyond cell, quite across wing; followed by another, sharply-defined *outwardly*, and marking the inner edge of the blue transverse stripe on *upper side;* an irregular transverse row of small black rings (the third from costa conspicuously *filled with white*); inner margin glossed with *purplish;* a *dull-reddish* stain near anal angle; two rows of indistinct blackish lunules along hind-margin. *Hind-wing:* much varied with indistinct blackish fasciæ in basal half; a blackish streak, enclosing a greenish line, at extremity of discoidal cell; a much-dentated, irregular, black line continues the well-defined one of *fore-wing* to inner margin beyond middle; also a row of five or six little black rings, continuous of that of *fore-wing*, as far as first median nervule; two rows of blackish lunules along hind-margin, less distinct than in fore-wing, but ending in a black mark at anal angle.

LARVA.—"Dark velvety-brown, with transverse rows of light-brown tubercles, which are centred with rather long, branched spines. Head light reddish-brown, with a black spot on each cheek, and one above the mouth, and crowned with two long branched spines."—*H. C. Harford*, MSS. description of Natalian specimen.

This is the Southern representative of the West-African *P. Amestris* (Drury), and is separable from that species by (1) its conspicuous basal blue irroration, (2) the constancy and large development of the blue discal band, (3) the less irregular black and red discal row of spots, (4) the absence of red striæ in discoidal cell of fore-wings, and (5) the uniform dark bronzy-green tint of the under side, without any representation of the red spots of the upper side except near anal angle of fore-wing. *P. Sesamus* is also larger than *P. Amestris.* It varies somewhat in the tint of its blue colouring, some individuals being more violaceous than usual, while in some rare instances the blue is very pale and suffused.

There are few such striking contrasts of colour among the South-African butterflies as that of the blue and red on the upper side of this beautiful species. I did not know the butterfly in life until June 1865, when I was delighted at beholding it basking in the sunshine on the Berea Road at D'Urban, Natal. During my subsequent visit, in the summer of 1867, I met with many specimens, chiefly in open hilly country. Though constantly to be seen flitting about with its congeners, *Octavia*, *Archesia*, and *Pelasgis*, I have noticed that *Sesamus* has a greater liking than any of them for shady places, preferring to settle under a bank or in some deep road-cutting. Colonel Bowker records an interesting note of the extent to which this habit is carried at the end of autumn, when he has found *Sesamus* congregated in some number under rocks and in holes of dry banks, as many as twenty-nine individuals having been captured at once by placing a net over the hole and disturbing them. The very dark bronzy-green under side is well adapted for concealment in such spots; but why the butterflies of this species should assemble in this manner is not very apparent.

In connection with the remarks given above under *Precis Octavia*, respecting certain curious individuals exhibiting characters allied to those of *P. Sesamus*, I here call attention to some examples in which, though on the whole the characters of the latter species predominate, there are features unmistakably approximating them to *Octavia*. These two examples (♂ and ♀) were taken by Colonel Bowker in December 1865, within a few days of each other, near the Mounted Police Post on the River Tsomo, in Kaffraria Proper. They want on the upper side the blue basal irroration; the central fascia is red, tinged with violaceous (instead of blue), and only separated from the ordinary red band—which is scarcely macular—by a narrow suffused fuscous ray; the two rows of blue marks in the hind-marginal border are very much reduced (especially in the ♀ specimen, where they have quite lost the form of lunules); and in the fore-wing the discoidal cell is marked as in *Octavia* with two red striæ, one near base very small and almost obsolete, the other near extremity of cell and very conspicuous. On the under side, the discal area beyond middle is clouded with pale-red, obscured with bronzy-green near costa of both wings; the basal region is less bronzy, with the markings more distinct, and in the discoidal cell of the fore-wing are two pale-reddish striæ.

A third South-African specimen (which I noted in the British Museum Collection in 1867 as "presented by R. C. Townshend, Esq.") much resembled the two just described, but was smaller, and the red colouring of the upper side was without violaceous lustre. On the under side of the hind-wing, the basal markings and the inner marginal border to submedian nervure were reddish—a feature presented by the Natal specimen near *Octavia* figured on my Plate IV.

In several of the characters just mentioned these three examples resemble the West-African *P. Amestris*, Dru., but differ remarkably in the possession of the central red fascia on the upper side.

Taking these specimens in association with those noted under *P. Octavia*, and bearing in mind Mr. Streatfeild's capture of the united sexes, it seems only reasonable to conclude that they are the hybrid progeny of two such different-looking species as *Octavia* and *Sesamus*.

Localities of *Precis Sesamus*.

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—Perie Bush, King William's Town (*J. H. Bowker*).

D. Kaffraria Proper.—Bashee and Tsomo Rivers, and Butterworth (*J. H. Bowker*). "Ibeka" (*F. N. Streatfeild*).
E. Natal.
  a. Coast Districts.—D'Urban. Mapumulo.
  b. Upper Districts.—Intzutze River. Little Noodsberg. Great Noodsberg. Hermansburg. Greytown. Pietermaritzburg. Estcourt (*J. M. Hutchinson*).
K. Transvaal.—Potchefstroom (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*)—Coll. Hope, Oxon.
    *b*1. Interior.—Mashunaland (*F. C. Selous*). "Kilima-njaro (*H. H. Johnston*)."—F. D. Godman.

73. (8.) Precis Archesia, (Cramer).

Papilio Archesia, Cram., Pap. Exot., iii. t. ccxix., ff. D, E (1782).
Vanessa Archesia, Godt., Enc. Meth., ix. p. 316, n. 47 (1819).
Junonia Archesia, Trim., Rhop. Afr. Aust., i. p. 133, n. 80 (1862).

Exp. al., 2 in. 4 lin.—2 in. 5 lin.

Warm-brown, with a tinge of ochreous; fore-wing with cellular blue striæ; a dull-red band crossing both wings. Fore-wing: three bluish, slender, transverse striæ edged with black in discoidal cell; a broader, sometimes ill-defined, inwardly black-edged, bluish streak from costa just beyond extremity of cell; a whitish-violaceous stripe from costa beyond middle becomes merged, on third median nervule, with a dull ochreous-red band parallel to hind-margin; this red band commences on costa, close to apex, with a narrow macular streak of dark-red (sometimes half-obliterated); a row of seven pale-bluish spots—all conspicuously *white-centred* except the first (and rarely the fifth)—parallel to hind-margin, four spots being before the dark-red streak from costa, and three *in* the red band; bordering hind-margin are two more or less distinct, lunulate, blue streaks; fringe dull-whitish, spotted with brown at extremities of nervules. *Hind-wing:* dull-red band, continuous of that in *fore-wing*, completely crosses wing from costa to inner margin a little before anal angle, and contains five small, bluish-white, black-ringed spots, between first subcostal and third median nervules; a slightly darker shade externally bounds red band; and a dark-brown, dentated streak runs near and parallel to hind-margin; anal angle irrorated with pale-blue scales; fringe as in *fore-wing*, but the brown marks not so distinct. UNDER SIDE.—*Dark-brown (varied with lighter-brown, and crossed by transverse greyish fasciæ) to beyond middle of both wings;* where, in place of the dull-red band of the *upper side*, is a whitish-ochreous one—the *inner* fork of the band, on costa, being the whitest portion—tinged with reddish or ochreous, particularly in *hind-wing*, and generally ill-defined outwardly; the row of spots common to both wings smaller than on upper side, *without* bluish tinge, whitish, in brown rings; hind-margins varied irregularly with whitish-grey, particularly at apices and anal angles; two dark-brown, lunulate streaks, more or less distinct and continuous, border hind-margins, the streaks in *hind-wing* occupying the same position as on *upper side;* fringes duller than on upper side.

The ♀ in colouring and pattern is like the ♂, but a little duller and paler; while her hind-wing is considerably broader and more rounded, being less acuminate at the anal angle.

VAR. A. (♂ and ♀).

Rather smaller. Common rufous band considerably paler, inclining to ochreous-yellow along its inner portion; the stripe from costa of fore-wing which forms part of the band not, or but very slightly, violaceous. *Fore-wing:* the cellular bluish striæ and the hind-marginal lunulate blue streaks less developed and sometimes indistinct. UNDER SIDE.—Basal areas more uniform in colour, being less varied with paler striæ; common discal band much paler and more developed, approaching in character towards the same feature in *P. Pelasgis* (Godt.)

It seems not improbable that this variety, which occurs near Grahamstown, in Kaffraria, and in Natal, in company with the typical form, is the result of unions between *Archesia* and *Pelasgis*,[1] all the points in which it differs leading towards the distinctive characters of the latter.

The under side in true *Archesia* presents much variation, some examples exhibiting slight bronzy reflections, and others inclining to a reddish tinge in parts. A ♂ taken by me at Greytown, in Natal, in March 1867, has all the under side of a warm ochreous-brown varied with ferruginous; and a similar but rather darker ♂ has reached me from the Lydenburg District of the Transvaal, where it was taken by Mr. T. Ayres.

I am inclined to include as a further variety of *Archesia* the *Precis Standingerii* of Dewitz[2] from Angola, which differs chiefly in the larger development of all the blue markings of the fore-wing and smooth unstreaked pale-brownish colouring of the under side. I have not, however, seen any Angolan examples; but I note that Mr. Druce (*Proc. Zool. Soc. Lond.*, 1875, p. 408) includes, without comment, *Archesia* amongst the late Mr. Monteiro's collections in Angola.

There are few handsomer or more conspicuous South-African butterflies than *P. Archesia.* It is fond of elevated situations, and, more than any of its congeners that I have observed, delights to bask or repose on rocks or large stones. Colonel Bowker has noted that it sometimes congregates under rocks, and is often met with in small rocky caverns in deep forest kloofs. It visits flowers pretty frequently nevertheless, and, though wary, is a bold insect, and not difficult to capture. Commoner in the summer, it yet is to be found in the winter months, and I recently met with good specimens at Grahamstown as late as the end of June. As far as known, the species does not come farther westward and southward than Knysna, where a single specimen was taken by Miss Wentworth (now Mrs. Muskett) in the year 1861.

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[1] Mr. A. G. Spiller has noted in the *Entomologist* for January 1882, that he had taken these two species *in copulâ.*

[2] *Nov. Act. Acad. Leop.-Carol.-Deutsch.*, xli. pars ii. n. 2, p. 193, tab. xxv. n. 15.

Localities of *Precis Archesia.*

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Knysna (*Miss Wentworth*).
    b. Eastern Districts.—Uitenhage. Grahamstown. Peddie. Kowie River Mouth (*J. L. Fry*). King William's Town (*W. S. M. D'Urban, Ven. H. Kitton, J. H. Bowker*). Windvogelberg. Queenstown (*Dr. Batho*).
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—Tongaati River.
    b. Upper Districts—Pietermaritzburg. Greytown. Estcourt (*J. M. Hutchinson*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola (*Pogge*)."—H. Dewitz. "Banana, Angola (*J. J. Monteiro*)."—H. Druce.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*).—Coll. Hope, Oxon.

74. (9.) **Precis Pelasgis,** Godart.

Vanessa Pelasgis, Godt., Enc. Meth., ix. Suppl., p. 820, n. 38–39 (1819).
Junonia Pelasgis, Trim., Rhop. Afr. Aust., i. p. 135, n. 81 (1862).

Exp. al., 2 in. 1 lin.—2 in. 4 lin.

Dark-brown; beyond middle a pale ochreous band tinged with dull-red crossing both wings. Fore-wing: some dull-reddish scales on costa near base; two irregular, sometimes half-obliterated, dull-red transverse striæ in discoidal cell, the inner striæ externally, the outer internally, edged with a blue-dotted black line; a thin black line inwardly edged with blue at extremity of cell, and a more indistinct similar stria a little beyond it; pale-ochreous band bifid on costa, the outer ray being very much narrower than the inner, macular, and more or less interrupted; immediately before the *outer* ray of the band are the first three of a transverse row of six white-centred black spots, parallel to hind-margin, of which the remaining three (as in the allied species) are *in* the ochreous band, near its outer edge, the last spot being above submedian nervure; close to hind-margin are two rows of lunular markings, scarcely paler than ground-colour, but the inner row more or less coloured with bluish scales; fringe brown, white-spotted in indentations of margin. *Hind-wing:* ochreous band continued across this wing, beyond middle, to a little before anal angle on inner margin, and containing five black dots, *not* white-centred, between first subcostal and third median nervules; two indistinct, slightly paler in tint, lunulate streaks, divided by a streak darker than ground-colour, border hind-margin; at anal angle is a faint-bluish mark; fringe as in *fore-wing.* UNDER SIDE.—Of a *darker, duller* *brown* than above; the transverse band very conspicuous, *white*, with a creamy tint on its edges, and with a faint *violaceous* lustre. *Fore-wing:* some scarcely distinguishable, thin, dark, transverse lines in cell; between which lines are occasionally a few scattered whitish scales; row of spots conspicuous, the lowest one geminate; apex more or less clouded with white scales; double row of lunules distincter than on upper side, some of them marked with white scales. *Hind-wing:* spots in band as on upper side; an ochreous-yellow tinge on inner margin at conclusion of band; lunular streaks as in *fore-wing.*

This near ally of *P. Archesia* (Cram.) is easily known by its paler, wider, differently-coloured transverse bands, which on the under side are very conspicuously creamy-white, and most distinctly defined on both edges. On the upper side also it almost totally wants every trace of the pale-blue markings of *Archesia;* while the ground of the under side is uniform dark-brown, with little if any paler striæ or varied clouding.

P. Chapunga (Hewits.), from the Zambesi, is still more closely related to *Pelasgis.* The two examples on which the late Mr. Hewitson founded the species both exhibit the striking features of the discal common band being so reduced as to consist (except as regards the costal bar at the upper extremity) only of reddish rings round the small black spots. The lunulate marginal rows on the upper side of the fore-wing are of the same reddish tint and well marked. On the under side the band is of the same character as in *Pelasgis*, but considerably narrower.

The range of *P. Pelasgis* agrees nearly with that of *P. Archesia*, and the habits of the two butterflies are much the same. I have frequently found them in company, haunting the same spots, and settling on the same rocks or flowers. At Highlands, near Grahamstown, I noticed, however, a habit in the ♂ *Pelasgis* which I have never witnessed in the case of *Archesia*, viz., that of perching himself on the projecting twig of some high bush at the edge of a wood, and thence giving chase to other passing butterflies. Mrs. Barber informed me that in the same locality she had noticed the ♀ *Pelasgis* laying her eggs on a white-flowered Labiate of the genus *Plectranthus.* This butterfly also keeps on the wing during part at least of the winter season, as I saw several examples at Grahamstown during June 1883.

Localities of *Precis Pelasgis.*

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—Grahamstown. Bedford (*J. P. Mansel Weale*). Keiskama Hoek, and King William's Town (*W. S. M. D'Urban*). Windvogelberg, Queenstown (*Dr. Batho*).
  D. Kaffraria Proper.—Mouth of St. John's River (*Sir H. Barkly*).
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Umhlali. Umvoti. Mapumulo.
    b. Upper Districts.—Fort Buckingham. Hermansburg. Pietermaritzburg (*Miss Colenso*). Estcourt (*J. M. Hutchinson*). Rorke's Drift (*J. H. Bowker*).
  K. Transvaal.—Potchefstroom (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    *b*1. Eastern Interior.—Shashani River (*F. C. Selous*). "Victoria Nyanza (*Rev. J. Hannington*)."—A. G. Butler.

75. (10.) **Precis natalica**, Felder.

Precis natalica, Feld., Wien. Ent. Monats., iv. p. 106 (1860).
Junonia Hecate, Trim., Rhop. Afr. Aust., i. p. 140, n. 84 (1862); and ii. pl. iii. f. 6 (1866).

Exp. al., 2 in. 2 lin.—2 in. 5 lin.

Dull greyish-brown, with dull ochreous-red transverse striæ and ocellated spots; four conspicuous pure-white spots near apex of fore-wing. *Fore-wing:* two ochreous-red, blackish-edged striæ across discoidal cell, the outer one closing cell; a broad space on costa, commencing a little beyond extremity of cell, is much darker than rest of wing, and contains three pure white spots, arranged transversely from first subcostal to third median nervule; a dark stripe, including an indistinct dull-red one, extends from third median nervule, immediately before the lowest white spot, to a little beyond middle of inner margin; a small pure-white spot on costa close to apex commences a row of blackish spots parallel to hind-margin, between nervules, as far as submedian nervure, the two lowest spots the largest, and always surrounded by an ochreous-red ring, wider on the inner side,—the other spots occasionally in indistinct smaller rings, some of them generally with minute bluish pupils; beyond these ocellate spots are two dark-brown or blackish lunulate striæ bordering hind-margin; fringe varied with white and brown. *Hind-wing:* a transverse, dull ochreous-red, black-edged stria about middle of discoidal cell, composed of two small spots, and a similar stria at extremity of cell; the dark stripe of fore-wing, enclosing a dull-red one, is continued across this wing, gradually narrowing towards inner margin, where, a little before anal angle, it becomes obsolete; beyond it, a transverse row of more or less conspicuous ochreous-red ocelli, with blue-dotted black centres, five in number, situated between first subcostal nervule and first median nervule,—the last spot the largest and brightest, and in a distinct, thin, yellow ring; in some specimens, a sixth similar but much smaller (occasionally *minute*) ocellus, above submedian nervure; two dark-brown, lunulate streaks beyond ocelli, parallel to hind-margin, but more continuous than in *fore-wing*,—darker at anal angle, where there is a slight irroration of blue-grey scales; fringe brown, slightly marked with white. UNDER SIDE.—*Very variable:* ground-colour commonly *much paler* than on upper side. *Fore-wing:* an additional dull-red mark in discoidal cell, at base; three white spots beyond cell, in darker portion, rather larger, commonly contiguous,—the row continued to first median nervule by two pale markings, immediately beneath which is a large, whitish spot; *before* this spot, and likewise immediately beneath first median nervule, is a similar, slightly smaller whitish spot; ocellate spots distincter than above, particularly the two immediately below small white costal spot,—the *two lowest ones rounder*, in thin yellow rings; hind-margin varied with whitish-grey. *Hind-wing:* sometimes, an additional, basal, dull-red mark in discoidal cell, the other transverse marks frequently extending above and below cell; two indistinct, darker, waved striæ cross wing *before* middle; just *beyond* middle, a more or less distinct, dull-red, outwardly dark-margined streak crosses from costa to inner margin a little before anal angle; occasionally, next costa, this streak is immediately succeeded by a short thin white mark, interrupted in its middle; ocelli mostly rather conspicuous; streaks beyond, parallel to margin, tinged with *blue*, especially near anal angle; the hind-margin more or less varied with violaceous or whitish-grey.

In some specimens the *under side is much suffused* and the *markings indistinct* and *without* the usual red tint; the transverse stripe on hind-wing is, however, very conspicuous, and commences with two white markings on costa. In others, the *under side is much tinged with a bronzy lustre,* and with the ocellated spots *scarcely visible.*

This species may be regarded as the Southern representative of *P. Chorimene* (Guér.), although it extends far to the northward along the Western Coast. It is distinguished by its much darker ground-colour, deeper red striæ and ocelli, and (especially) by the possession of the subapical row of three conspicuous white spots in the fore-wing. Its hind-wing is not so sharply angulated, nor so much produced at the anal angle.

Natalica differs similarly from the allied but smaller *P. Goudotii* (Boisd.) of Madagascar; but the latter also presents the peculiar character of a row of seven minute white spots in black rings running near and parallel to the hind-margin in the fore-wing.

I do not know of the occurrence of this butterfly to the south of Natal, but on the coast of that Colony it is numerous. It frequents the outskirts of woods, and has a hurried irregular flight, often settling on the ground. Colonel Bowker has sent me two pairs taken *in copulâ,* and I captured one pair on 12th February 1867; the sexes only differ in size and in the rather paler colouring of the female. The species must be on the wing for the greater part if not the whole of the year, as I met with specimens on one occasion at the end of June, and afterwards abundantly throughout the summer.

Localities of *Precis natalica.*

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. "Lower Umkomazi."—J. H. Bowker.

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—Zambesi (*Rev. H. Rowley*).
    *b*1. Eastern Interior.—Zambesi; opposite Zumbo, and near Umsengaisi (*F. C. Selous*). Inyoutete River (*F. C. Selous*).
  B. North Tropical.
    a. Western Coast.—Calabar.—Coll. Hewitson.

76. (11.) **Precis Elgiva**, (Hewitson).

Junonia Elgiva, Hewits., Exot. Butt., iii. pl. 13, f. 1 (1864).
Junonia Xipha, Butl., Cist. Ent., i. p. 7 (1869).

Exp. al., 2 in.—2 in. 4½ lin.

Dark-brown; a common transverse discal band of ochre-yellow, bounded externally on hind-wing by a row of ocellated spots. Fore-wing: an indistinct dull-reddish transverse stria edged narrowly on both sides with blackish, about middle of discoidal cell, and a similar, more waved, stria at extremity of cell; discal band commencing narrowly near costa about middle, but widening gradually downward to inner margin,—its outer edge much curved posteriorly, its inner edge bluntly angulated on third median nervule; just within the outer edge of the band (and usually touching the brown ground-colour) in its lower half, a row of three rather suffused inter-nervular dark-brown spots, of which the lowest is geminate; close to costa and near apex, two very small white spots, of which the lower is sometimes obsolete; a moderately wide hind-marginal border of paler brown traversed longitudinally by a dark-brown streak. *Hind-wing:* closing discoidal cell, a faint reddish stria like that in fore-wing, but narrower and straighter; discal band commencing narrowly and palely on costa beyond middle, its inner edge only slightly waved, its outer edge directly bounded by a row of six ocellated spots; of these spots all but the two lowest are externally imperfect and obscured with dark-brown, but the two complete ones are dark-red, ringed with ochre-yellow and blackish, and centred with black bearing a bluish pupil, —the sixth or last being geminate and bipupillate; hind-marginal border as in fore-wing; anal-angular process irrorated with bluish. Cilia dark-brown, with small but distinct white inter-nervular spots. UNDER SIDE.—*Pale dull-creamy, streaked and clouded with brown;* a common median dark-brown streak from costa of fore-wing to anal angle of hind-wing, and a common discal row of ocelli; two submarginal brown streaks, the inner much more dentated than the outer one. *Fore-wing:* cellular striæ distinct, ochre-brown, both prolonged as far as submedian nervure; beyond them a third, darker, broader, more denticulated stria immediately preceding the dark-brown transverse streak; apical area clouded with brown, which extends along nearly all the hind-margin; discal row of ocelli commencing with the lower of the two very small white spots near apex, and having the second, third, and fourth very small and indistinct, but the fifth and sixth large and better marked, being pale-ochreous in a brown ring and centred with a whitish-pupilled blackish spot. *Hind-wing:* median dark-brown streak conspicuous, slightly suffused with reddish-brown; before middle a similar but much more curved and irregular transverse streak; three or four thin brown striolæ in discoidal cell; of the six discal ocelli the third and fourth are very small and imperfect, but the others are distinct, the fifth having the colours almost as bright as on the upper side; hind-margin clouded with brownish inferiorly.

The colouring of the under side varies much, some specimens being suffused with a pale-olivaceous or dull-brownish tinge generally, while a few examples present an almost uniform dull creamy-ferruginous tint, except for the dark median streak inwardly bordered rather conspicuously with ochre-yellow. The sexes are quite alike, except that in the ♀ the discal band of the upper side is rather broader.

P. Elgiva is the Southern representative of *P. Terea* (Drury), which inhabits Tropical Western Africa. It is readily separable on the upper side by its much narrower ochre-yellow discal band (untraversed by the longitudinal streak so conspicuous in *Terea*), and by its having in the fore-wing only two subapical small white spots, instead of a submarginal row of six or seven subocellate ones, and in the hind-wing much better defined ocelli. On the under side all the markings in *Elgiva* (except in the rather rare examples coloured with creamy-ferruginous) are darker and browner and more strongly developed, especially the striæ before middle and the discal ocelli.

I first met with this fine *Precis* near the Tongaati River, in Natal, on the 20th March 1867, and a few days afterwards fell in with it again on the Umhlanga, not far from D'Urban. The neighbourhood of the latter place has since yielded many specimens to Mr. W. D. Gooch and Colonel Bowker, and the latter has sent me the paired sexes taken in March 1879 and April 1881. The butterfly is conspicuous on the wing, and has quite the same habits as *P. natalica*, flitting about near the herbage in wooded spots.

Mr. Hewitson's figure is from a Zambesian example, apparently faded, the colouring being considerably paler than in good Natalian examples.

Localities of *Precis Elgiva*.

- I. South Africa.
  - E. Natal.
    - *a.* Coast Districts.—D'Urban (*J. H. Bowker* and *W. D. Gooch*). Umhlanga. Tongaati.
- II. Other African Regions.
  - A. South Tropical.
    - *a.* Western Coast.—"Angola (Pogge)."—Dewitz.
    - *b.* Eastern Coast.—Zambesi (*J. Dickinson*).—Hewitson. "Tchouacka (*Raffray*)."—Oberthür.
  - B. North Tropical.
    - *a.* Western Coast.—"Old Calabar (Coll. Druce)."—Butler.

77. (12.) **Precis Tugela**, Trimen.

Plate IV. fig. 5 (♀).

Precis Tugela, Trim., Trans. Ent. Soc. Lond., 1879, p. 334.

Exp. al., 2 in. 5½ lin. (♂); 2 in. 11 lin. (♀).

♂ *Dark-brown, with broad ochre-yellow discal band.* *Fore-wing:* band commencing on costa, curved convexly outwardly, its edges irregular (especially the inner one, which is *deeply indented by ground-*

colour just below third median nervule); from near apex to above submedian a discal row of six small black spots, the lower three of which are in the yellow band just beyond its middle line; the first and second of the row are white-centred (the latter conspicuously), and the sixth accompanied inferiorly by a black dot; costa near base scaled with ferruginous-rufous; in discoidal cell three black-edged irregular striæ, of which the basal one is rufous-tinged and imperfect, the central one distinctly rufous in its upper portion, and the outer one of the ground-colour defining extremity of cell; along hind-margin two very indistinct paler lunulated striæ, the inner rather more apparent than the outer, being slightly dusted with whitish. *Hind-wing:* band commencing narrowly on costa, but suddenly broadening between subcostal nervules, and continuing widely almost to inner margin beyond middle; it is rather paler than in fore-wing, but similarly contains exteriorly a row of small black spots, all six of which are conspicuous on the ochre-yellow; hind-marginal lunulated striæ rather more distinct than in fore-wing, especially near anal angle, where they are sprinkled with bluish-white scales continuous of those which cover the long anal-angular projection; hind-margin distinctly edged with rufous-ochreous. Cilia very narrow, dull-brown generally, but white just below projection of fore-wing. UNDER SIDE.—Varied with ferruginous-brown and pale ochre-yellow; *a conspicuous patch of the latter in fore-wing on costal border beyond middle;* the submarginal lunulated stria lilac-white, suffused; the small black spots of discal row all white-centred except the fourth and fifth of the fore-wing; a dark-brown streak curving inwardly commences suffusedly on subapical projection of fore-wing and runs to anal-angular projection of hind-wing.

♀ Closely resembles ♂. *Fore-wing:* costa narrowly suffused with ochreous throughout, the ferruginous-rufous towards base and in disco-cellular striæ more distinct than in ♂; third spot of discal row (as well as first and second) white-centred. *Hind-wing:* third spot of discal row minutely white-centred. UNDER SIDE.—That of one example marked as in ♂, and with the pale-ochreous patch of fore-wing very conspicuous, *but with bronzy greenish-grey replacing the ferruginous-brown*, and the common dark stripe very strongly marked; while that of a second example is *wholly pale-ferruginous* with violaceous and bronzy reflections, with the common streak and the discal spots faintly marked in *dull cream-colour*. In outline of fore-wing the subapical projection is very long and dusted with bluish-white, while in the ♂ it is quite short and without irroration.

In colouring and marking this species bears a very strong resemblance to *P. Elgiva* (Hewits.), but is at once distinguishable (1) by the hind-wings presenting a row of simple black spots of small size on the upper side instead of the multicoloured ocelli, and (2) by the deep indentation of the ochre-yellow band of the fore-wing on its inner side. In outline, *P. Tugela* has the projections of the wings in both sexes (but particularly in the ♀ as regards the fore-wings) very much longer. The species to which *Tugela* seems actually most nearly allied (setting aside the colour of the transverse band) are *P. Pelarga* (Fab.) and *P. Kowara* (Ward) from West Africa, both of which present almost the same outline of wings, description of spots in discal row, and inner indentation of the band on the fore-wings.

I met with a single specimen of this butterfly in Natal on the 8th March 1867; it was settled, with expanded wings, on a fern in a densely-wooded ravine at Kranzkop, Tunjumbili, on the Tugela River. This was a ♂; and I saw no other examples until 1879, when two ♀s were received at the South-African Museum in a fine collection formed by Mr. T. Ayres, with the note that they had been taken in the Lydenburg District of the Transvaal. In May 1882, in a collection shown to me by Colonel S. Scott, R.A., and stated to have been made at Maritzburg in Natal, I noticed a single specimen of what appeared to be a variety of *P. Tugela*, having the discal band tinged with rufous.

Localities of *Precis Tugela*.

- I. South Africa.
  - E. Natal.
    - *b.* Upper Districts.—Tugela (Tunjumbili). ? Maritzburg (*Colonel S. Scott*).
  - K. Transvaal.—Lydenburg District (*T. Ayres*).

GENUS SALAMIS.

Salamis, Boisd., Faune Ent. de Madag., &c., p. 46 (1833); Doubl. (Junonia, "Section III."), Gen. Diurn. Lep., i. p. 211 (1849).
Protogoniomorpha, Wallgrn., Lep. Rhop. Caffr. in K. Sv. Vet.-Akad. Handl., ii. No. 1, p. 23 (1857).
Junonia (part), Trim., Rhop. Afr. Aust., i. pp. 124, 125 (1862).

IMAGO.—Characters of *Precis* generally. *Antennæ* shorter, with a narrow, elongated, very gradually formed club. *Prothorax* very distinctly defined, forming a distinct neck. *Discoidal cell* in both fore- and hind-wings closed by a very slender nervule, meeting third median nervule in fore-wings a little beyond, in hind-wings at, its origin.

Besides the few characters given, there is only the large size of the nine or ten species included in *Salamis* to distinguish them from *Precis*. The Malagasy *S. Augustina*, Boisd. (on which the genus was founded), and *S. Anteva*, Ward, are in outline of wings like the group of *Precis* represented by *P. Tugela*, Trim., and *P. Kowara* (Ward), and their colouring—dull-red and fuscous above and ochreous or ferruginous-brown beneath—is rather sombre; but the *Cacta* and *Cytora* sections present a handsome bluish-purple upper side, and have rather well-marked ocellated spots on the under side; while the splendid pearly *Anacardii*, Linn., and its allies have a most peculiar facies, and are among the loveliest of known butterflies.

Salamis is confined to the Ethiopian Region, appearing to be most developed on the Tropical Western Coast, while two species seem to be peculiar to Madagascar, and a third confined to it and the neighbouring Mascarene Islands. It is the *Anacardii* section that has the widest range through the region; and two of its members reach Natal, where the finest perhaps of all—*Anacardii* itself—is numerous in the coast country.

I can find no record of the larva, except a brief note by M. Vinson respecting that of the Malagasy *S. Duprœi* (*Voyage à Madagascar*, 1865, p. 574), which he mentions as "white, in length 5½ centimetres, covered with branched spines."

78. (1.) **Salamis Anacardii**, (Linn.)

Papilio Anacardii, Linn., Mus. Lud. Ulr. Reg., p. 236, n. 55 (1764); and Syst. Nat., i. 2, p. 758, n. 74 [part] (1767).
Papilio Parrhasus, Dru., Ill. Nat. Hist., iii. pl. iv. ff. 1, 2 (1782).
Vanessa Aglatonice, Godt., Enc. Meth., ix. p. 299, n. 8 (1819).
Protogoniomorpha Anacardii, Wallgrn., K. Sv. Vet.-Akad. Handl., Lep. Rhop. Caffr., p. 24 (1857).
Junonia Anacardii, Trim., Rhop. Afr. Aust., i. p. 141, n. 85 (1862).

Exp. al., 3 in. 5 lin.—4 in. 3 lin.

Very pale greenish or greenish-white, shot with a brilliant rosy-violet lustre, more vivid in ♂, giving a "mother-of-pearl"-like aspect to the wings; spotted and margined with blackish.

Fore-wing: costa thinly powdered with minute blackish atoms to slightly beyond middle, where commences a narrow, blackish edging, rapidly widening to apex, where it forms a rather broad bordering; hind-margin also bordered with blackish, which, wide at apex, gradually narrows to anal angle, where it is sometimes very indistinct; from subcostal nervure are two short, transverse, thin, slightly waved streaks, one crossing discoidal cell about its middle, the other closing cell; from first subcostal nervule, a little beyond extremity of cell, is a third streak to first median nervule; these three streaks are all liable to be very indistinct, or even *obliterated* in their lower portion, but the streak *beyond cell* is always continued to inner margin about middle by a very faint, thin, grey line; near apex, between the two discoidal nervules, a rounded blackish spot, sometimes united to apical blackish; two other black spots beyond middle, one above, the other below, first median nervule,—the upper spot the larger, and centred with violet-blue (which centre is sometimes edged inwardly by a red crescent); two blackish dots, between this ocellate spot and the blackish spot near apex, complete the transverse row of spots; close and parallel to hind-margin, a row of larger or smaller blackish spots, between nervules, sometimes *united to* hind-marginal blackish. *Hind-wing:* beyond middle, parallel to hind-margin, between costal nervure and first median nervule, a row of six black spots, of which the first and second are of moderate size and *not* ocellate,—the third larger, with violet-blue pupil and red lunule,—the fourth and fifth blackish only (rarely red-centred), very small, or sometimes altogether obsolete,—the sixth large, very distinct, containing a violet-blue pupilled red centre in a conspicuous *yellow ring;* beyond these, also between nervules, a row of thin, blackish, lunulate marks, from costa to anal angle, strongest in ♀, the thickest lunule being at anal angle, and in some specimens broadly suffused with blackish internally; the thin, grey line of *fore-wing* continued obliquely across this wing to inner margin, a little before anal angle; a blackish streak bordering hind-margin, which is also thinly irrorated with blackish atoms. UNDER SIDE.—*Paler, glistening* somewhat irridescent, but *without* the rich lustre of *upper side; blackish markings reduced to very thin lines and dots;* thin line crossing both wings distinct and black. *Fore-wing:* two pale, slightly pinkish, thinly black-edged, rather broad, transverse stripes, from costa before middle to just above submedian nervure, where the *outer black edging* of the stripe nearest middle meets the thin black line from costa, forming a spot, while its *inner edging* forms a similar spot with the outer black edging of the stripe nearer base; on the *inner* side of the thin transverse line, a minute irroration of black atoms, and bordering it *externally* is a whitish, pink-tinged stripe; spot near apex in the same position as on *upper side*, but *pale-yellow*, with a violet-pupilled red centre, and *in* a thin black ring; spot *above* first median nervule also of these colours, and conspicuous, but spot *below* that nervule small and not clearly marked; hind-marginal row of spots represented by a very thin, wavy, often interrupted line; a slight, *pale-brownish tinge* on hind-marginal edge. *Hind-wing:* marked very similarly to *fore-wing; only one* indistinct pale band before middle, not defined on its *inner* side; a rather large elongate whitish spot in discoidal cell near its extremity; blackish irrorations, bordering inner edge of black transverse line, more thickly sprinkled than in *fore-wing;* only two ocellated spots visible, more conspicuous than those in *fore-wing*, but of the same colours, situated respectively between second subcostal and discoidal nervules, and between first and second median nervules.

Mr. H. Druce (*Proc. Zool. Soc. Lond.*, 1875, p. 409) observes that Mr. Monteiro's specimens from Angola were "smaller than those from Natal, with a much deeper pink gloss."

This large and splendidly-coloured butterfly has a wide range across Tropical Africa, and seems to find its southern limit in Natal. At D'Urban, in that Colony, it is a common species in the summer months, and, during my stay from January to April 1867, I observed and captured many examples. The flowers of *Lantana* were its favourite resort in the Botanic Garden, and it was not unusual to see six or eight on a single bush. I often noticed one perched on the leaves of trees at some height from the ground, keeping its head outward and its wings erect, and occasionally I found a female at rest on the under surface of a leaf with her wings hanging downward. Among scattered bushes or in roads about wooded spots *Anacardii* is fond of sporting at about eight or ten feet from the ground, floating about with fully expanded wings; and it is then that the full beauty of its glittering wings is most apparent. On such occasions it is generally a pair that appears, the male flying round the female. Colonel Bowker informs me that he observed several females ovipositing in the Berea Woods, near D'Urban, on 23d November 1879; the greenish eggs were deposited singly on the under side of the upper leaves of a herbaceous plant in the underwood.

I have published in the *Proceedings of the Entomological Society of London* the same observer's account of his capture of a male *Anacardii* paired with the female of a Saturnide moth (*Aphelia Apollinaris*, Westw.) of somewhat similar appearance.

Localities of *Salamis Anacardii.*

- I. South Africa.
  - E. Natal.
    - *a.* Coast Districts.—D'Urban. Verulam. Tugela River Mouth (*J. H. Bowker*). "Lower Umkomazi."—J. H. Bowker.
    - *b.* Upper Districts.—Pietermaritzburg (—*Windham*).
- II. Other African Regions.
  - A. South Tropical.
    - *a.* Western Coast.—"Angola (*Pogge*); Chinchoxo (Falkenstein)." —Dewitz. "Angola (*J. J. Monteiro*)."—Druce.
    - *b.* Eastern Coast.—Zambesi (*H. Waller*). "Mombas [Endara] (*Kersten*)."—Gerstäcker. "Abyssinia: Lake Tsana (*Raffray*)." —Oberthür.
  - B. North Tropical.
    - *a.* Western Coast.—Fernando Po (*E. Bourke*). Calabar (Hewitson Collection). Ashanti and Sierra Leone (Brit. Mus. Coll.)

79. (2.) **Salamis nebulosa**, Trimen.

PLATE IV. fig. 6 (♀).

Salamis nebulosa, Trim., Trans. Ent. Soc. Lond., 1881, p. 441.

Exp. al., 2 in. 6 lin. (♂); 2 in. 9 lin.—3 in. 1 lin. (♀).

♂ *Iridescent whitish, with fuscous markings. Fore-wing:* a well-defined pale bluish-grey basal cloud reaching as far as middle of discoidal cell; upper disco-cellular nervule with a thin curved fuscous mark; apical area widely fuscous, from costa a little beyond end of cell to end of second median nervule on hind-margin; inner edge of this apical patch irregularly excavated; near apex three white spots, of which the second (close to subapical projection) is divided by a transverse fuscous streak, and the third is indistinct; lower portion of hind-marginal fuscous narrowly continued to posterior angle by rather suffused hind-marginal and submarginal fuscous streaks; near the inner of these streaks, between second median nervule and submedian nervure, two fuscous spots, rather large, obliquely placed, and slightly suffused. *Hind-wing:* a basal grey suffusion, narrower and less distinct than in fore-wing; immediately before hind-margin a parallel fuscous streak, preceding which is a lunulate, suffused, fuscous streak, becoming irregular and less distinct in its lower portion, but with the outer streak enclosing six more or less ill-defined whitish marks; a little before apex, from costa to second subcostal nervule, a large elongate fuscous marking, leaving two white spots between it and the submarginal streak; immediately beneath and slightly beyond this marking an obscure fuscous red-centred pale-yellow-ringed ocellus; below this some greyish irroration, extending to anal angle, but interrupted between second and first median nervule by a conspicuous red, blue-pupilled, black-clouded, yellow-and-black ringed ocellus; the trace of a faint grey line from costa, about middle, straight to before anal angle or inner margin, where it becomes darker but suffused. UNDER SIDE.—*Duller, iridescence much fainter, very thinly irrorated with fuscous, except about a central band;* the fuscous markings only indicated by a greyer tint; near bases a common double transverse irregular stria (indistinct in hind-wing) from costal nervure of fore-wing to submedian nervure of hind-wing; also a common fuscous streak from first median nervule of fore-wing to inner margin near anal angle of hind-wing. *Fore-wing:* a very short, thin transverse stria in cell close to base; a double stria, closing cell, from costa to below first median nervule, where its outer edge joins the common fuscous streak; fuscous spots near hind-margin and posterior angle represented by two imperfect fuscous ocelli in white rings; another similar (or more imperfect) ocellus near subapical projection. *Hind-wing:* the two ocelli equally distinct and well coloured, but the lower one the larger; anal-angular termination of submarginal streak enlarged and conspicuously fuscous.

♀ *Like the male, but with all the fuscous markings broader. Fore-wing:* basal grey ill defined or almost obsolete; common fuscous streak of under side usually more or less distinctly marked, interrupted, commencing on subcostal nervure a little beyond cell, and sharply angulated on third median nervule; an additional small white spot immediately beyond the first in apical fuscous; the two large black discal spots usually so suffusedly increased as to be confluent with the hind-marginal fuscous, and so enclosing three or four whitish spots. *Hind-wing:* the common streak distinct; other markings much as in male; the upper ocellus more obscured with fuscous. UNDER SIDE.—*Duller, much more closely irrorated than in male, inclining to yellowish* (*in one example, very pale sandy-brownish*). *Hind-wing:* the ocelli remarkably smaller, rather ovate than circular, much duller in colouring.

The subapical projection of the fore-wing is considerably longer in the female than in the male.

This butterfly is nearly related to *S. Anacardii*, L. It is distinguished by its smaller size (especially in the male, where this is very remarkable); white, instead of greenish, ground-colour; much duller iridescence, and great development of the dark markings, especially in the apical area of the fore-wings; while the under side is conspicuously duller and less metallic, more irrorated, without white variegation, and with uncoloured and almost obsolete ocelli in the fore-wing. In outline the projections of both wings are much shorter and blunter, especially in the male.

In several of the characters noted, *S. nebulosa* approaches the Madagascarene *S. Dupræi*, Vinson, but it altogether wants the long anal-angular tail of the hind-wing so conspicuous in that species, and has much larger dark markings in the hind-wing; while the blunt sub-apical projection of the fore-wing is totally different from the long process so conspicuous in *S. Dupræi*.[1]

Three specimens of this butterfly—a male and two females—were taken near St. Lucia Bay, in Zululand, by the late Colonel H. Tower in the year 1867, and presented to me by him in the following year. It was not until 1878 that I saw another example, Colonel J. H. Bowker having, in November of that year, forwarded to the South-African Museum a female found by him in a collection of insects made at D'Urban, Natal, by a resident there. Colonel Bowker has recently sent me a male captured by himself in the neighbourhood of D'Urban.

Mrs. Monteiro's collection contains a fine female taken at Delagoa Bay; and there are three specimens in Mr. Henley Grose Smith's collection, which were sent, I believe, from some part of Tropical Eastern Africa.

Three examples which I have seen from the Gold Coast, one of which is in the collection of the South-African Museum, differ slightly from those above-mentioned in having the black markings of the upper side less developed, although much more so than in *Anacardii*.

Localities of *Salamis nebulosus*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban (*J. H. Bowker*).
  F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).
  H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—Zanzibar (*Watkins*).
    *b*1. Interior.—Zambesi [mouth of Umsengaizi] (*F. C. Selous*).
  B. North Tropical.
    a. Western Coast.—Cape Coast Castle (*E. Bourke* and *J. M. Pask*).

GENUS CRENIS.

Crenis, Boisd., Faune Ent. de Madag., &c., p. 48 (1833); Doubl. ("Section 4" of *Myscelia*), Gen. Diurn. Lep., i. pp. 220–223 (1849); Wallengren, Lep. Rhop. Caffr. 1857, p. 30.

Myscelia, Trimen, Rhop. Afr. Aust., i. p. 144 (1862).

Eunica (Hübn.), Hopff., Peters' Reise nach Mossamb., Ins., p. 381 (1862); Trim., *op. cit.*, ii. p. 338 (1866).

IMAGO.—*Head* rather small, very hairy on summit and in front; *eyes* smooth, very prominent; *palpi* rather short, convergent, ascendant, clothed with scales and very fine short hairs (most developed on second joint above), the terminal joint not distinctly separated from the second, rather wide, moderately acute; *antennæ* of moderate length, with a narrow, elongated, gradually-formed club, somewhat flattened and hollowed externally.

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[1] *S. definita*, Butler (*Ann. and Mag. Nat. Hist.*, Sept. 1879, p. 230), is nearly allied to *S. Dupræi*, and also inhabits Madagascar; in the much less falcated fore-wings and smaller size (especially of the ♂), it makes some approach to *S. nebulosa*.

Thorax rather slender, moderately clothed with longish hair above, closely and shortly pubescent beneath. *Fore-wings:* with costa slightly arched; apical portion slightly prominent, or produced and moderately truncate; hind-margin slightly or moderately concave about middle; inner margin almost straight; costal and median nervules swollen for some distance from base; submedian nervure curved downward at a little distance from base; first subcostal nervule emitted considerably before extremity of discoidal cell, second about midway between first and extremity of cell; middle disco-cellular nervule rather long, much curved towards base; lower disco-cellular longer, less curved, slender but distinct, meeting third median nervule at or just beyond its origin; discoidal cell very short, truncate. *Hind-wings:* with costa moderately humped close to base, and thence almost straight; hind-margin rounded, moderately sinuate-dentate; discoidal cell very short, the nervule closing it very much attenuated or almost obsolete; internal nervure terminating in a line with tip of abdomen; groove formed by inner margins moderately deep. *Fore-legs* of ♂ clothed rather thickly throughout with long hairs; of ♀ not much larger, with the femur hairy, and the tibia and tarsus scaly, with a few short hairs. *Middle* and *hind legs* of moderate size, scaly; tibiæ with only a few small spines laterally and beneath, and with the terminal spurs short and weak; tarsi moderately spinulose beneath, the terminal claws strong and curved.

Abdomen rather short, very slender in ♂.

PUPA.—Head rather acutely and deeply bifid; thorax rather deep, and very broad (owing to lateral expansion of wing-covers, forming blunted angulations at bases and posterior angles); dorso-thoracic prominence very high, acute; abdomen slender, slightly *recurved.*

(Described from a pencil drawing by Mr. W. D. Gooch of a Natalian example of either *C. Natalensis* or *C. Boisduvali.*)

Crenis is doubtfully separable from *Eunica,* Hübn.—a South-American genus—the only differences that I can discover being that in the former the head is smaller, the palpi longer, the thorax less robust, and the costa of the hind-wings not nearly so prominently humped near the base.

The swollen costal and median nervures of the fore-wings afford a ready mark of distinguishing *Crenis* from any other South-African genera of *Nymphalinæ* except *Eurytela* and *Hypanis,* and both the latter are at once recognised by their very much longer palpi. All the nine species[1] recorded are natives of the Ethiopian Region, and the genus comprises two sections very distinct in appearance. The first of these, represented by the type *C. Madagascariensis*, Boisd., consists of middle-sized or rather small butterflies, with apically produced fore-wings, and of dull yellow-ochreous and brown tints above, while beneath their colouring is pale-grey with darker streaks and ocellated spots. The second, of which *C. Amulia* (Cram.) is typical, are rather larger insects, whose fore-wings are not or very little produced, with blue or metallic-violet upper side and a rich yellow-ochreous or orange-ochreous under side, with shining-violaceous or greenish-white streaks and ocellated spots. *C. Ribbei*, Dewitz, from Angola, is to some extent intermediate between the two sections, combining the outline and dark colouring of the first group with a purple upper-side gloss.

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[1] *Harma Concordia,* Hopffer (figured in Peters' Reise nach Mossambique, Ins., t. xxii. ff. 3, 4), is evidently a *Crenis* not distantly allied to *C. Amulia* (Cram.) Only the ♀ is recorded; its locality is given as Querimba.

The genus is quite tropical, but better developed to the south than to the north of the Equator. The three very nearly-allied species found in Natal—*Natalensis*, *Boisduvali*, and *Morantii*—are closely related to the Malagasy type-species; but the very rare *C. Rosa*, Hewits., discovered at Delagoa Bay, is a very handsome member of the second section above described.

C. Natalensis and *C. Boisduvali* are confined to wooded spots; their flight is weak and short, and they keep much about a particular tree or group of trees in little companies, settling very frequently on the trunks and branches. Colonel Bowker has found them come freely to "sugar," and I have noticed them drinking the moisture exuding from wounds in trees.

80. (1.) **Crenis Natalensis**, Boisduval.

PLATE V. fig. 1 (♀).

Crenis Natalensis, Boisd., App. Voy. de Deleg., p. 592, n. 80 (1847).
Eunica natalensis, Hopf., in Peters' Reise nach Mossamb., p. 381 (1862).

Exp. al., 2 in. 1–3 lin.

♂ *Dull yellowish-ochreous, clouded with fuscous-brownish in apical area of fore-wing;* a common discal row of small black spots and a common row of thin black lunules close to hind-margins, which are narrowly clouded with brownish. *Fore-wing:* fuscous-brownish ill-defined interiorly, commencing at about extremity of cell, and leaving a subapical rather indistinct oblique macular ray of the ground-colour; in discal row of spots a wide interval, two being wanting between third and first median nervules. *Hind-wing:* seven spots in discal row, more conspicuous than in fore-wing, ringed rather widely with yellowish-ochreous slightly paler than the ground-colour. Cilia fuscous-brownish, with whitish inter-nervular marks. UNDER SIDE.—*Hind-wing and apex of fore-wing hoary-grey;* a submarginal common fuscous streak broken into inter-nervular spots in fore-wing, but more linear and continuous in hind-wing. *Fore-wing:* yellowish-ochreous ground-colour much paler and clearer, especially near inner margin; apical grey rather narrow, bounded inwardly by a large conspicuous but ill-defined subquadrate fuscous patch; the subapical spots of discal row in the middle of very indistinct brownish-ochreous rings. *Hind-wing:* before middle an irregular, broken, transverse ochre-yellow streak; about middle a similar but more continuous streak; both these streaks include an outer thin line of brown, and the space between them is sometimes duller grey than the rest of the wing; a short streak of the same colouring at extremity of discoidal cell; seven spots of discal row well marked, in the middle of seven contiguous ochre-yellow rings; a smaller, additional, similar, rather indistinct spot before the seventh on inner-margin.

♀ *Ground-colour yellower, clearer; apical fuscous of fore-wing much broader and darker, and enclosing two conspicuous, parallel, oblique, macular rays of a paler ochre-yellow than the ground-colour. Hind-wing:* discal spots rather larger than in ♂. UNDER SIDE.—*Hind-wing and apex of fore-wing paler than in ♂, all the markings better defined. Fore-wing:* ground-colour deeper; subapical fuscous patch enlarged to imperfectly enclose an interrupted oblique ray corresponding to that on upper side.

Compared with its very close ally, *C. Madagascariensis*, Boisd., this butterfly is in both sexes characterised by a more rufous instead of olivaceous upper-side tint of ochreous, and by the much less development of the apical fuscous in the fore-wings, especially in the ♂, where it is little more than a dusky suffusion without defined limits. The under side hoary-grey is inclining to a lilacine tinge, and almost free from the fine fuscous irroration noticeable in *Madagascariensis,* while the rings of the ocellate spots and the basal and median streaks in the hind-wing are ochre-yellow (the latter brown-edged) instead of fuscous. All the three transverse streaks of the hind-wing are also less irregular and dentated.

This butterfly is not uncommon at D'Urban, in Natal, though apparently much less numerous than its near congener, *C. Boisduvali*, Wallengren, with which I associated it in my *Rhopalocera Africæ Australis*, taking the few true *C. Natalensis* I had seen as only larger and paler examples of the same species. Both forms have quite the same habits, flitting about trees in wooded spots, and frequently settling on the trunk or branches. The specimens I captured were on the wing in February, but Colonel Bowker took a good many in August.

Localities of *Crenis Natalensis*.

- I. South Africa.
  - E. Natal.
    - *a.* Coast Districts.—D'Urban.
  - K. Transvaal.—Lydenburg District (*T. Ayres*).
- II. Other African Regions.
  - A. South Tropical.
    - *a.* Western Coast.—"Angola (*Pogge*)."—Dewitz.
    - *b.* Eastern Coast.—"Querimba" (*Hopffer*).

81. (2.) **Crenis Boisduvali**, Wallengren.

Plate V. fig. 2 (♂), fig. 2*a* (♀).

Crenis Boisduvali, Wallgrn., K. S. Vet.-Akad. Handl.; Lep. Rhop. Caffr., p. 30, n. 2 (1857).

Myscelia Natalensis, Trim., Rhop. Afr. Aust., i. p. 144, n. 86 (1862).

Exp. al., 1 in. 9½ lin.—2 in. 1 lin.

♂ *Dull-brown with a tinge of yellow-ochreous. Fore-wing:* unicolorous, with only the faint indications of a transverse row of darker spots near hind-margin. *Hind-wing:* an ochreous tint prevails towards hind-margin which has an edging of thin lunules darker than ground-colour; beyond middle, parallel to hind-margin, a row of five small, rounded, blackish spots between nervules. Under side.—*Paler. Fore-wing:* dull-ochreous, somewhat glistening; on costa, a little before middle, an obliquely transverse dark streak, inclining *outwards* as far as third median nervule; immediately beyond streak a dusky, ill-defined, darker space; apical portion *pale yellowish-greyish*, with four elongate black spots near the inner edge of the greyish colouring; a row of seven dusky-blackish short streaks parallel to hind-margin, not reaching to anal angle. *Hind-wing: pale yellowish-grey;* before middle a broad, irregularly-shaped, violet-grey fascia with brown edges; beyond middle a row of seven contiguous ocellated spots, violet-grey, black-centred, in golden-brown rings; on inner margin is an indistinct, smaller, eighth ocellated spot, *without* a black centre, a little *before* the row of spots; beyond these a thin dark streak, parallel to hind-margin, composed of united lunules.

♀ *Paler, strongly suffused with yellow-ochreous. Fore-wing:* shaded with blackish in apical portion, from extremity of discoidal cell, with an *oblique, dull, yellow-ochreous stripe*, interrupted on third median nervule, from costa about middle to second median nervule, not far from hind-margin; nearer apex is a much shorter, narrower, paler, and less distinct stripe, parallel to the larger one. *Hind-wing:* yellow-ochreous tint pervades the whole surface, but is strongest near hind-margin, where the row of black spots is conspicuous, and the brown along hind-margin forms a distinct border to the wing. Under side.—*Fore-wing: warm yellow-ochreous;* the dusky oblique markings from costa in this sex assume the form of two conspicuous blackish stripes; colouring at apex *much paler* than in ♂, *yellowish-white*, varied with pale-brownish, the black spots very conspicuous. *Hind-wing:* ground-colour *yellowish-white;* fascia before middle much paler than in ♂, its brown edges conspicuous; row of contiguous ocellated spots much paler, their black centres very conspicuous.

The constantly smaller size and much darker colouring distinguish this form from *C. Natalensis*, Boisd. In the ♂ these characters are very marked, but some of the larger ♀ examples exhibit a yellower tint than the ordinary ones possess. The under-side markings are all more strongly defined and darker than in *C. Natalensis*.

On the upper side of the fore-wing *Boisduvali* in both sexes wants altogether (or occasionally presents a slight trace of) the large isolated black spot of the discal row which lies between the first median nervule and the submedian nervure.

This species is abundant at Port Natal, where I met with it in June and August 1865, and again from January to April 1867. A tree in the Botanic Gardens near D'Urban was shown to me by the superintendent, a great number of the leaves of which was white with the empty pupa-skins, and I found one pupa from which the imago was on the point of emerging. This pupa was slender and subangulated, but, as the imago was completely developed, I could not record the proper colour or marking.

C. Boisduvali appears to range farther southward than *C. Natalensis,* a female specimen having been sent to the South-African Museum which was taken by Mr. Alexander Bowker at Pembroke, near King William's Town, in March 1873.

Colonel Bowker has twice sent me the paired sexes; they were taken in August 1878 and March 1879. I had previously taken a pair at D'Urban, Natal, in April 1867.

Localities of *Crenis Boisduvali.*

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—King William's Town (*A. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban.
  H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).

82. (3.) **Crenis Morantii**, Trimen.

Plate V. fig. 3 (♀).

Crenis Morantii, Trim., Trans. Ent. Soc. Lond., 1881, p. 439.

Exp. al., 2 in. 1 lin. (♀).

♀ *Dull ochreous-brown; the fore-wing with a darker space and some pale dull yellow-ochreous marks.* *Fore-wing:* a fuscous-brown space near costa, about and beyond middle, forming an ill-defined cloud, commencing immediately beyond extremity of discoidal cell; this cloud encloses a yellow-ochreous spot a little beyond cell, and is bounded externally towards apex by an elongate paler spot close to costa, and between third and second median nervules by a smaller similar spot ill-defined outwardly; towards hind-margin the ground colour is paler and very faintly tinged with yellow-ochreous (except near apex); a submarginal row of very indistinct inter-nervular small fuscous-brown spots. *Hind-wing:* very faintly tinged with yellow-ochreous about apex, near which are two faint fuscous-brown dots. Under side.—*Hind-wing and apical area of fore-wing cream-colour, inclining to argillaceous.* *Fore-wing:* yellow-ochreous, becoming much paler beyond middle; fuscous-brown cloud very conspicuous, and the ochreous spot it encloses larger and better defined than on upper side; the two outer spots, on the contrary, much less distinct, and quite merged in the ground-colour; costa from base narrowly bordered with dull cream-colour; submarginal row of seven small fuscous spots; a little before it, near costa, a curved row of three black dots. *Hind-wing:* three transverse thin brownish-rufous striæ, the first and second (respectively before and about middle) very irregular and interrupted, the third (near hind-margin) regular and lunulated; between the second and third striæ a row of seven contiguous ocelli, centred with a black and yellow dot, and ringed with brownish rufous; of these, the middle (fourth) one is smallest and more indistinct than the rest; a small brownish-rufous striola at extremity of discoidal cell; between it and the first ocellus some slight fuscous irroration.

This species is nearly allied to both *C. natalensis*, Boisd., and *C. madagascariensis*, Boisd. From the former it differs, on the upper side, in its very much darker colouring and exceedingly ill-defined marking, wanting alike the warm yellow-ochreous ground-colour in both wings, and the black spots and lunules in the hind-wings; while on the under side it is cream-colour, with rufous markings, instead of hoary, clouded with fuscous-grey and with fuscous markings; and the fore-wing altogether wants the suffused spot near posterior angle, so conspicuous in *C. natalensis.*

From *C. madagascariensis* it diverges almost similarly, as regards the upper side, in its want of warm ochreous colouring; and its vague fuscous-brown space (enclosing an ochreous spot) is altogether different from the broad dark apical area, which in *C. madagascariensis* is only varied by the bar of three small indistinct ochreous spots from costa, not far from apex. On the under side, *C. Morantii* has none of the hoary colouring of the Malagasy species, and all its striæ and ocelli are much more distinct, besides being rufous instead of dull grey; while in the hind-wing the central and submarginal striæ are more irregular and dentated.

The only example of this insect that I have met with is the female above described, which was taken at Pinetown (Natal) in April or May 1869, by Mr. Walter Morant, an able observer and collector, after whom I have named the species. Mr. Morant wrote that the specimen in question settled on the trunks of trees, with closed wings, in the same manner as *C. natalensis*, and that he believed he had seen, if not taken, a male nearly resembling it.[1]

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[1] Colonel Bowker has since taken three examples near Pinetown, viz., a ♂ on 26th July 1884, and two ♀s in July and December 1884 respectively. The ♀s are on the upper side of a rather warmer, more rufous tint, with the spots about the fuscous cloud of the fore-wing of a deeper ochre-yellow; and one of them expands 2 in. 4 lin. The ♂ is much smaller, expanding only 1 in. 11 lin.; the fore-wings are more produced apically, and the upper side generally appears to be unicolorous dull ochreous-brown of the same tint as prevails in the ♀ discovered by Mr. Morant, with the exception of a small paler marking in fore-wing midway between discoidal cell and apex, and in hind-wing between discoidal cell and hind-margin (these markings are in this specimen much enlarged and blurred in the left-hand wings). The under side does not differ from that of the ♀ except in the markings generally being less clearly defined.

Colonel Bowker wrote that the few specimens of this insect he met with flew higher than either *Natalensis* or *Boisduvali*, and that the ♂ just described fluttered down from a tree and settled on a stone in the bed of the Umbilo.

Locality of *Crenis Morantii.*

I. South Africa.
  E. Natal.
    a. Coast District.—Pinetown (*W. Morant*).

83. (4.) **Crenis Rosa**, Hewitson.

Crenis Rosa, Hewits., Ent. M. Mag., xiv. p. 82 (1877).

Exp. al., 2 in. $5\frac{1}{2}$ lin.

♀ *Bluish-violaceous, with fuscous spots and borders. Fore-wing:* between extremity of discoidal cell and apex two oblique fuscous bars crossing from subcostal nervure to near third median nervule; a moderately-wide hind-marginal border of fuscous, radiating rather broadly along the nervures, and forming a suffused cloud between second and first median nervules; a row of spots near and parallel to hind-marginal border, of which only the three upper ones are distinct; just below third median, a small isolated spot in a line with the inner oblique bar. *Hind-wing:* duller than fore-wing; hind-marginal border ill-defined, traversed by a light-blue streak, brightest and widest near anal angle; submarginal row of spots continuous of that of fore-wing, but the spots much larger, rounder, and relieved by an outer ring of somewhat paler blue. Nervules generally defined with reddish-fuscous. Cilia dull-white, mixed with fuscous at extremities of nervules. UNDER SIDE.—*Warm ochre-yellow, with greenish-white and black markings. Fore-wing:* costa very narrowly, apex and hind-margin narrowly, bordered with greenish-white; a fine extreme hind-marginal edging of black, preceded by a similar black line broken into eight inter-nervular lineolæ; inner oblique bar only represented, and that much attenuated, but spot below third median nervule larger than on upper side; a sub-apical row of four black spots, representing submarginal row of upper side, of which the upper three are small and in greenish-white rings, while the fourth is much larger. *Hind-wing:* a pre-median, a median, and a hind-marginal band, and also a narrow costal edging, of greenish-white, each traversed by a black streak interrupted on the nervures —that traversing the middle band being highly irregular; midway between median and hind-marginal bands, a row of seven conspicuous black spots in broad greenish-white rings; hind-margin itself finely edged with black.

Allied to *C. Benguelæ,* Chapman, from the Congo, but the upper-side colouring much brighter than in the ♀ of that species (being, indeed, bluer than in the ♂ *Benguelæ*), which is greenish-grey, clouded from bases with dull-fuscous. The under side is remarkably different, especially as regards the ochre-yellow of the fore-wing, which in both sexes of *Benguelæ* is restricted to a small basal patch, leaving the discal area almost wholly fuscous varied with bluish; while all the spots and other black markings are very much thinner, and the greenish-white much brighter, than in *Benguelæ* throughout.

From the West-African *Crenis Amulia* (Cram.) the species described is easily separated by its much bluer tint on the upper side, and by the much wider and greenish-white instead of bluish-white markings on the under side, although in the feature of the almost uniform ochre-yellow of the under side of the fore-wing the two species approach each other.

The only example of this very beautiful *Crenis* that I have seen is the ♀ above described, which was taken by the late Mr. J. J. Monteiro at Delagoa Bay in 1877, and was acquired for Mr. Hewitson's collection, now in the British Museum. Mrs. Monteiro has informed me that this butterfly was captured on the wing "a little overhead," at a spot called Poulana, and that no other example was met with.

In a paper in the *Annals and Mag. Nat. Hist.* for August 1883, Mr. A. G. Butler records the receipt of "a splendid male" of *C. Rosa* from the Victoria Nyanza, but does not note in what respect it differs from the female.

Localities of *Crenis Rosa*.

I. South Africa.
  H. Delagoa Bay.—Lourenço Marques (*J. J. Monteiro*).

II. Other African Regions.
  A. South Tropical.
  *b*1. Interior.—"Victoria Nyanza."—A. G. Butler.

GENUS EURYTELA.

Eurytela, Boisd., Faune Ent. de Madag., &c., p. 54 (1833); Westw., Gen. Diurn. Lep., ii. p. 408 (1851).

IMAGO.—*Head* of moderate size, hairy, with a small tuft of longer hairs at base of each antenna; *eyes* usually hairy; *palpi* much elongated, not compressed laterally, separate throughout but converging slightly at tips,—second joint tufted above and finely hairy beneath,—terminal joint unusually long (about half as long as the second), rather blunt at tip, bent at a very obtuse angle with second joint and projecting horizontally about level with top of head, densely scaled; *antennæ* of moderate length, with a gradually formed but rather short, slender, laterally-flattened club, ending obtusely.

Thorax rather slender; back shortly pilose anteriorly and posteriorly; breast rather scantily hairy. *Fore-wings:* generally more or less produced apically, usually angulated at extremity of lower discoidal (radial) nervule and prominent at extremity of second median nervule; costa but little arched; apical angle well marked; hind-margin dentated, usually more or less excavated in middle; inner margin very slightly hollowed about middle; costal nervure strongly swollen for a considerable distance from base, curved upward rather abruptly towards extremity, and terminating about middle of costa; first and second subcostal nervules originating rather close together, just before extremity of discoidal cell,—third at a considerable distance beyond cell, and terminating at apex; discoidal cell very short; upper disco-cellular nervule minute, almost obsolete,—middle one short or very short and curved inwardly,—lower one very long and attenuated, very slightly curved, ending at origin of third median nervule. *Hind-wings:* with costa prominently humped near base, but thence nearly straight; apex rather pronounced; hind-margin more dentate than in fore-wings, especially towards anal angle slightly prominent; groove formed by inner margins shallow, incomplete, leaving much of lower side of abdomen exposed; costal nervure running close along costa to apex; radial nervure originating not far from base, just beyond the branching of subcostal nervules; discoidal cell extremely short, narrow,—the lower disco-cellular nervule exceedingly slender or obsolete altogether. *Fore-legs* of ♂ very small, slender, scaly, set rather scantily throughout with longish hairs; of ♀ larger, smoother, with scarcely any hairs, the tarsus dilated and spinose beneath at extremity. *Middle* and *hind legs* stout, rather short, scaly,—femora fringed with fine hairs beneath,—tibiæ finely spinulose beneath, with terminal spurs very short,—tarsi rather thickly armed with minute spines laterally and beneath.

Abdomen slender, rather short.

LARVA.—Head with two long, erect, curved, spiny horns; body with dorsal and lateral tubercular processes bearing at extremity radiating bristles.

PUPA.—Head acutely bifid; wing-covers not only prominently angulated at bases, but sharply angulated and extended flatly outwardly; back rather gibbous; abdomen slightly curved, bifid at extremity.

[The above characters of larva and pupa are taken from drawings of Natalian specimens of *E. Hiarbas* reared by Captain Harford and Mr. Gooch. Except for the very long branched horns on the head, the larva recalls those of *Limenitis* and *Neptis;* and the pupa only exhibits in an exaggerated form the extended wing-covers of the chrysalis of the latter genus,—to judge from the figure of that of *Neptis Varmona*, Moore (*Lep. Ceylon*, i. pl. 28, f. 1*b*.)]

The long and very porrect palpi, and the simple instead of swollen median nervure, at once distinguish *Eurytela* from *Crenis*, apart from the less apparent characters (especially the dilated fore-tarsi of the ♀ and the peculiar neuration of both wings) mentioned in the above diagnosis. The genus is mainly Ethiopian, five species being recorded from the African Continent and two others from Madagascar; but two or three are known to inhabit the Indo-Malayan Sub-Region.[1]

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[1] Mr. Wallace (*Trans. Ent. Soc. Lond.*, 1869, p. 331) states his belief that two of these latter, Boisduval's *Horsfieldii* and *Stephensii*, from Java, are ♂ and ♀ of one species.

For so small a group there is considerable diversity of form and great differences of colouring among the species. *E. Ethosea* (Drury), from West Africa, is so peculiar in outline and pattern as to have been placed in the genus *Acræa* by Godart; *E. Ophione* (Cram.) closely resembles *Neptis Melicerta* (Drury); *E. fulgurata* (Boisd.), of Madagascar, has a somewhat similar black and white (though much more irregular) pattern, but is very strongly angulated and dentated on the hind-margins; while the Malaccan and Bornean *E. Castelnaui*, Feld., is, on the upper side, of an uniform bright blue. The two species occurring in South Africa, *E. Hiarbas* (Dru.) and *E. Dryope* (Fab.), present a white or ochre-yellow transverse band (chiefly developed in the hind-wings) on a blackish-brown ground, while the under side is varied with pale-brown and ferruginous. They have a very wide range through Africa, *Hiarbas* penetrating considerably farther south than *Dryope,* whose limit seems to be the coast of Natal. Both species are strictly sylvan, and in habits and mode of flight much resemble *Crenis.*

84. (1.) **Eurytela Hiarbas,** (Drury).

Plate V. fig. 5 (Var. A. ♂).

Papilio Hiarbas, Dru., Ill. Nat. Hist., iii. pl. 14, ff. 1, 2 (1872).
Biblis Hiarba, Godt., Enc. Meth., ix. Suppl. p. 824, n. 5–6*a* (1819).
Eurytela Hiarbas, Doubl., Gen. Diurn. Lep., pl. 31, f. 4 (1846–50).
,, ,, Trim., Rhop. Afr. Aust., ii. p. 212, n. 122 (1862).

Exp. al., 2 in.—2 in. 6 lin.

Glossy blackish-brown (♀ *duller and paler*), *with a common transverse white stripe,* commencing near hind-margin (to which it is parallel) of *fore-wing* about third median nervule, widening as it descends, and extending straight across hind-wing from costa (close to apex) to anal angle. *Fore-wing:* a white dot close to costa near apex, beneath which are two indistinct ferruginous spots, indicates proper origin of transverse stripe; costa and hind-margin more or less tinged with ferruginous, especially the latter, which is marked by a row of thin silvery-white lunules towards anal angle. *Hind-wing:* hind-margin coloured as in fore-wing, more conspicuously so near anal angle, and with two rows of silvery lunules, the inner continuous of that of fore-wing, and its lunules touching so as to form a festooned streak,—lunules of the outer row separate, indistinct towards costa. *Cilia* white between nervules. Under side.—*Pale-brownish with ferruginous streaks and clouds;* transverse stripe narrower, not so white as above, commenced by a very thin, often indistinct, streak (originating a little below white costal dot of fore-wing), and interrupted on costa of hind-wing, where it is clouded with ferruginous and marked with a row of three blackish dots: *common to both wings,*—a dentate outwardly bluish white-edged stria crossing discoidal cells; a double bluish-white line closing cell; an irregular transverse stripe, interrupted on third median nervules, just beyond cells; a darker shade of brown between this stripe and the white one; and two rows (more or less interrupted) of whitish hind-marginal lunules. *Fore-wing:* a minute line close to base and a ring beyond it (enclosing a ferruginous one) in discoidal cell, bluish-white; a ferruginous cloud on costa beyond middle, and two others (smaller) on projections of hind-margin. *Hind-wing:* a whitish ring in cell near base; close to it a smaller one above cell; a large ferruginous cloud on hind-margin, between discoidal nervule and anal angle.

VAR. A. ♂.—*Common transverse stripe warm ochreous-yellow* instead of white, and a little wider in hind-wing and on inner margin of fore-wing.

Hab.—D'Urban, Natal (one specimen; Colonel Bowker, July 1880).

PLATE V. fig. 5.

Aberration ♀.—Common transverse white band crenelated on both sides, and somewhat suffused,—in hind-wing considerably broader than usual; two hind-marginal rows of silvery-white lunules in hind-wing united so as to form a border, thinly irrorated with fuscous. UNDER SIDE.—Ferruginous and other markings somewhat confused and blurred; white stripe not so well defined as on upper side.

Hab.—D'Urban, Natal (one specimen; Colonel Bowker, 29th October 1879).

LARVA.—Green or greenish, paler on under surface, with elevated sub-spinous dorsal and sub-spiracular lateral tubercular processes terminating in a stellate tuft of three to five bristles; processes on second and third segments only half the length of those on fourth to tenth segments, but on eleventh and twelfth much longer than the latter. A sub-spiracular white or whitish longitudinal stripe, interrupted obliquely on each segment from fifth to tenth; below this stripe, on third and fourth segments, a black streak. Granulated black dorsal patches on fourth, sixth, seventh, and eleventh segments. Head dark-brown or blackish, slightly larger than next segment, bearing in front two long, upright, outwardly-curving, rather widely-divergent horns, thickened and branched at the tip, and irregularly spined throughout; these horns are black in front and sandy-coloured behind; the face flat, edged with white, and closely set with white hairs or bristles. Length, 1 to 1¼ inch. Feeds on a common creeper, *Dalechampia capensis.*

PUPA.—Green, darker on back; wing-covers finely edged and transversely streaked with dark-brown or blackish; also the following blackish marks, viz., a dot on each wing-cover, on each side of the thorax and abdomen, and on the head. In form, the head is acutely bifid; lateral angles at bases of wing-covers very prominent; wing-covers flattened, sharply angulated, and extended far out from the body; thorax rounded, expanded; back prominent; abdomen more or less angular, slightly curved inward, bifid at tip. The chrysalis state lasts from ten to fifteen days.

The above descriptions of larva and pupa are from notes and drawings furnished by Captain H. C. Harford and Mr. W. D. Gooch. Both these gentlemen reared the butterfly on the Natal Coast. Captain Harford notes that the larva, like those of many *Nymphalidæ*, has a habit of wagging its head about—doubtless a menacing gesture, to which the long antler-like horns would give point. He also remarks that it spins a web to lie upon over the surface of a leaf. Mr. Gooch observes that the larva presents a variety in which all the body except the spiracular stripe is blackish.

Mr. Druce (*Proc. Zool. Soc. Lond.*, 1875, p. 409) notes that examples of this butterfly, taken by the late Mr. J. J. Monteiro in Angola, had the white band of the hind-wings much wider than in the specimens from Natal.

The Variety A. of *Hiarbas* indicates an intimate relation of the species with its congener *Dryope*, Cramer, which has the common transverse stripe of the same warm ochreous-yellow, but much broader. This alliance is emphasised by the circumstance of the capture by Colonel Bowker, on 13th April 1881, at D'Urban, Natal, of an ordinary male *Hiarbas*, paired with a female *Dryope*, only separable from ordinary examples by a narrower yellow band in the hind-wings. My correspondent wrote—"There was no question about this union, as I followed the pair for some distance before making the capture; on the wing, the female carried the male." The paired sexes of *Hiarbas* were taken by Colonel Bowker at D'Urban in March 1879.

This elegant butterfly prevails widely over the wooded parts of South Africa. Its flight is somewhat curious, not rapid or direct, but backwards and forwards in a limited space, usually about a group of shrubs or young trees. Often several individuals keep hovering around a single tree, or settle on the stem and sun themselves, shuffling about in a playful fashion. I have not noticed it anywhere in abundance, but it may be termed common—specimens almost always being seen in the course of a woodland walk.

Localities of *Eurytela Hiarbas.*

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Knysna.
    b. Eastern Districts.—Grahamstown. Kleinemond River, Bathurst (*H. J. Atherstone*). "King William's Town."—W. S. M. D'Urban. East London (*P. Borcherds*).
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban. "Lower Umkomazi."—J. H. Bowker.
    b. Upper Districts.—Pietermaritzburg (*Miss Colenso*).
  F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola (*J. J. Monteiro*)."—Druce.
  B. North Tropical.
    a. Western Coast.—Sierra Leone: Ashanti.—Coll. Brit. Mus.
    b. Eastern Coast.—"Abyssinia: Shoa (*Antinori*)."—Oberthür.

85. (2.) **Eurytela Dryope**, (Cramer).

Papilio Dryope, Cram., Pap. Exot., t. lxxviii. ff. E, F (1779).
Biblis Dryope, Godt., Enc. Meth., ix. Suppl. p. 824, n. 5–6*b* (1819).
Eurytela Dryope, Trim., Rhop. Afr. Aust., ii. p. 213, n. 123 (1866).

Exp. al., 2 in. 1–7 lin.

♂ *Brown, with a warm ochreous-yellow discal transverse band common to both wings. Fore-wing:* the band begins very narrowly on upper radial nervule, but widens greatly downwards till it occupies about the outer third of inner marginal edge; externally the band is bounded by a lunulate submarginal black streak, and internally by a broad, obscure, chocolate-red band extending from costa to inner margin; on costa near apex a short row of two to four very faint small ochreous-yellow spots indicate actual origin of the band of that colour; before middle two obscure, irregular, transverse fuscous streaks, of which the outer internally edges the obscure chocolate-red band; also, two cellular striolæ, one near base, the other at extremity of cell; a hind-marginal narrow border of mixed brown and ochreous-yellow, the yellow predominating at posterior angle. *Hind-wing:* ochreous-yellow band very wide, occupying apical area and extending pretty evenly to inner margin before and up to anal angle, leaving a border of the ground-colour only along its middle portion, and that of variable width and distinctness; lunulate black submarginal streak more conspicuous than in fore-wing, becoming silvery-edged in its lower portion; hind-marginal brownish-ochreous border traversed by a broken indistinct fuscous streak; before middle, two very obscure fuscous streaks continuous of those in fore-wing. *Cilia* fuscous, with white inter-nervular marks. UNDER SIDE.—*Brownish-grey, much varied with transverse irregular ferruginous streaks and thin white or whitish lines; in both wings* the following thinly white-edged ferruginous streaks before middle, viz., a short cellular one (smaller in hind-wing), a long one from costa to submedian nervure crossing cell, an almost linear even one at extremity of cell, and a broader very irregular one quite across wing beyond cell; a little beyond this latter streak, an irregular whitish line (sometimes indistinct), which in hind-wing runs near and almost parallel to the ferruginous streak. *Fore-wing:* immediately beyond whitish line just mentioned a ferruginous transverse bar, widest on costa; succeeded by a row of eight small lunulate marks, of which the first (on costa) is white and all the others ochreous-yellow; beyond the lunules a paler space traversed inwardly by a more or less distinct white or whitish streak; two hind-marginal, lunulated, parallel white linear streaks (of which the inner one is silvery), obscured by a ferruginous cloud both below apex and a little above posterior angle. *Hind-wing:* a similar arrangement of markings to that in fore-wing; in the row of seven lunules the two near costa are usually creamy-yellow and conspicuous, the others indistinct and sub-ocellate (being outwardly marked with a fuscous dot); inner of two hind-marginal white linear streaks bright silvery.

♀ *Duller, paler throughout;* ochreous-yellow band in hind-wing usually proportionately narrower; transverse fuscous streaks before middle much more apparent, broader. *Fore-wing:* first spot of short subapical row enlarged, whitish, rather conspicuous. UNDER SIDE.—*Paler, more inclining to ochreous;* all the markings more conspicuous; the paler discal space well marked; its traversing whitish ray rather suffused, but continued across hind-wing.

In a small female, taken near D'Urban by Colonel Bowker, the fore-wing presents in a narrower form the median transverse chocolate-red band of the male, and the ochreous-yellow band in the hind-wing is very broad, having only a little brown irroration externally and inferiorly.

Southern examples of this butterfly are usually considerably larger than the type-form from the West Coast of Africa, and the under side of their wings is rather darker, especially in the discal area,—in which latter, however, the traversing whitish streak is much more distinct, being sometimes obsolete in Gold Coast specimens. The angulation of the wings is also much more pronounced in South-African examples.[1]

Colonel Bowker has sent me the paired sexes, taken at D'Urban, Natal, in May 1880. In this case the female was the small one above mentioned. As noted under *E. Hiarbas*, a female not separable from *Dryope* (but with a narrower than usual ochreous-yellow band in hind-wing) was captured *in copulâ* with an ordinary male of the former species. A very perfect male *Dryope*, received from Delagoa Bay (where it was taken by Mrs. Monteiro), almost exactly agrees with the female just mentioned in the comparative narrowness of the hind-wing band; but even in this individual the band is twice as wide as in the male *Eurytela*, which I have described as Variety A. of *E. Hiarbas.*

Apart from its colour, the width of this band in both wings, the browner ground-colour, the fuscous streaks before middle, and the male character of a chocolate-red median band are the chief features distinguishing *Dryope* from *Hiarbas* on the upper side; while on the under side, the more ochraceous general tint, the less broken and less angulated striæ, the want of any distinct discal stripe in the hind-wing, and the presence, instead, of two conspicuous costal lunules heading a row of very indistinct imperfect ocellate marks are all distinctive of *Dryope.*

I did not meet with this species in Natal, but Colonel Bowker has been more fortunate, taking several examples near D'Urban in August, December, and February, and two at the mouth of the Tugela River in July. He describes it as having the same habits as *Hiarbas*, but as much rarer. I have not heard of its occurrence to the south of Natal.

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[1] I think that *E. Narinda*, Ward, from Madagascar, though closely allied to *E. Dryope*, is entitled to recognition as a distinct species. It is small (about the size of the West-African *Dryope*), but the wings are even more angulated than those of the Southern examples described in the text. On the upper side the ochreous-yellow band in the male begins nearer apex of fore-wing, and is very much broader in both wings; and in the fore-wing its inner side is deeply pierced by the dark-clouded nervules, while in the hind-wing it occupies greater part of surface from before the middle. In the female, the only marked difference in the band is its width in the fore-wing. In both sexes the hind-marginal striæ are straighter, not so lunulated. The under side is very different; all the striæ being straighter, narrower, and of a yellower ferruginous; the hind-marginal clouds very pronounced; and the white discal streak very well marked.

Localities of *Eurytela Dryope.*

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban and mouth of Tugela River (*J. H. Bowker*).
  F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).
  H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola: Loanda (*R. Meldola*)."—Butler. "Angola (*J. J. Monteiro*)."—Druce.
    b. Eastern Coast.—"Querimba."—Hopffer.
  B. North Tropical.
    a. Western Coast.—Cape Coast Castle (*J. M. Pask*). Sierra Leone (Coll. Brit. Mus.)
    b. Eastern Coast.—"Abyssinia: Lake Tzana (*Raffray*), and Shoa (*Antinori*)."—Oberthür.

GENUS HYPANIS.

Hypanis, Boisd., Faune Ent. de Madag., &c., p. 55 (1833); Westw., Gen. Diurn. Lep., ii. p. 410 (1851).

IMAGO.—Characters generally of *Eurytela. Antennæ* with a longer club; *eyes* smooth. *Thorax* rather thicker, more rounded. *Fore-wings:* not apically produced; hind-margin not angulated or dentated, but very slightly sinuated. *Hind-wings:* not so prominently humped near base; hind-margin rather more decidedly sinuated than on fore-wings. *Middle-* and *hind-legs* with the tibiæ and tarsus more spiny, and the tibial spurs longer. *Abdomen* more slender and much longer.

PUPA.—Slender, elongate, especially in abdominal region; anal extremity with suddenly-narrowed point of attachment from blunt end of abdomen. Cephalic prominences well-marked, acutely pointed; dorso-thoracic elevation highly ridged to a sharp point; edges of wing-covers prominently ridged at shoulders and again at posterior angles, forming strong projections laterally; between these two hinder projections, at base of back of abdomen, a pointed tubercular prominence; two minute tubercular points on median line of back, about midway between base and extremity of abdomen. Antennæ-covers prominent.

(These characters of the pupa are given from a living example sent to me by Colonel Bowker at the beginning of December 1878, from Natal.)

The elongated abdomen and almost entire hind-margins of the wings are the features which mainly distinguish *Hypanis* from *Eurytela*. Its pattern and colouring are, however, highly characteristic, the fulvous-ochreous upper side being varied with black bands and irregular markings, while the under side of the hind-wings is remarkable for the number and varying shades (creamy, yellow-ochreous, ferruginous, black-and-white) of its transverse bands and chains of spots.

As will be seen below, I have not been able to separate specifically more than one of the many forms of *H. Ilithyia* (Drury) which have been named by different authors, viz., the Malagasy *H. Anvatara*, Boisd.; but the form most prevalent in South-Eastern Africa (to which Wallengren's name *Acheloïa* is given), while it follows the type-form in the extreme variability of its under-side colouring, is a sufficiently recognisable variety.

H. Ilithyia is a handsome and conspicuous insect on the wing; it shows much more activity than *Eurytela Hiarbas*, and though more frequent about woods, is often to be found in open ground. It ranges over the whole of Africa, and as far eastward as India and Ceylon, its near ally, *H. Anvatara*, appearing to replace it in Madagascar and the Comoro Islands.

The pupa is in form not unlike that of the allied genus *Ergolis*, Boisd., judging from the figure given by Horsfield and Moore (*Cat. Lep. Ins. H.E.I.C. Museum*, 1857, pl. vi. f. *6a*) of the chrysalis of the Javan *E. Coryta* (Cram.)

86. (1.) **Hypanis Ilithyia**, (Drury).

PLATE V. fig. 4 (Var. A. ♂).

♂ *Papilio Ilithyia*, Drur., Ill. Nat. Hist., ii. pl. xvii. ff. 1, 2 (1773).
♀ *Papilio Polinice*, Cram., Pap. Exot., iv. t. ccclxxv. ff. G, H (1782).
Biblis Ilithyia, Godt. [part], Enc. Meth., ix. p. 327, n. 7 (1819).
Hypanis Polinice, Boisd., Sp. Gen. Lep., i. pl. ix. f. 6 (1836).
Hypanis Cora, Feisth., Ann. Soc. Ent. Fr., 1850, p. 249, n. 2.
Hypanis Ilithyia, Hopff. [part], Peters' Reise nach Mossamb., Ins., p. 396 (1862).
,, ,, Trim. [part], Rhop. Afr. Aust., ii. p. 214, n. 124 (1866); and Trans. Ent. Soc. Lond. (1870), p. 359.
Byblia Ilithyia, Moore, Lep. Ceylon, p. 45, pl. 23, ff. 3, 3*a* (1881).

VAR. A. *Acheloïa*, Wallengr.

Papilio Ilythia, Cram., Pap. Exot., iii. t. 213, ff. A, B (♀), and t. 214, ff. C, D (♂), (1782).
Biblis Ilithyia, Godt. [part], Enc. Meth., ix. p. 327, n. 7 (1819).
Hypanis Ilithyia, Doubl., Gen. Diurn. Lep., p. 411, pl. 68, f. 1 (1851).
Hypanis Ilithya, Wallgrn., K. Sv. Vet.-Ak. Handl., Lep. Rhop. Caffr., p. 29 n. 1 (1857).
Hypanis Acheloïa, Wallgrn., *op. cit.*, p. 29, n. 2 (1857).
Hypanis Ilithyia, Hopff. [part], Peters' Reise nach Mossamb., Ins., p. 396 (1862).
,, ,, Trim. [part], Rhop. Afr. Aust., ii. p. 214, n. 124 (1866).

Exp. al., 1 in. 8½ lin.—2 in. 3 lin.

♂ *Warm fulvous-ochreous, with black bands and other markings. Fore-wing:* along costa, from base to a little distance before apex, a moderately broad band, emitting downward three rather curved transverse disco-cellular striæ,—a wider, more oblique, subangulated bar beyond cell, as far as third median nervule, and a small, short stria (sometimes a mere dentation) near the end of the band; from inner margin, before middle, an oblique irregular marking, emitting an upward sharp projection which all but meets the middle disco-cellular stria, and ending abruptly in a broad subquadrate portion which superiorly touches origin of third and second median nervules; a short, narrow, black line along third median nervule connects this irregular marking with the angulated transverse bar emitted by costal band beyond extremity of cell; a moderately wide or rather narrow submarginal band, from inner margin to lower radial nervule, inwardly denticulated on nervules, outwardly united by five black nervular rays to a narrow black hind-marginal edging traversed by a whitish line; end of costal band and of its almost terminal short ray or dentation also united to hind-marginal edging by four black nervular rays, much longer than the five lower ones. *Hind-wing:* an irregular basal patch, externally dentate and somewhat excavate, not running along costa, but emitting two sharp denticulations to it; a little before middle a transverse row of four or five small spots, from near upper extremity of basal patch to near inner margin; a rather broad submarginal band (continuous of, but wider than, that of fore-wing), inwardly denticulate, and outwardly united by nervular black rays to a hind-marginal edging rather broader than that of fore-wing, so that seven rather large elongate spots of the ground-colour are enclosed. *Cilia* fuscous, with conspicuous white inter-nervular spots. UNDER SIDE.—*Paler, duller; hind-wing with strongly-contrasted transverse bands, very variable. Fore-wing:* costal band wanting, but its rays and cellular striæ (of which latter the middle one commences on costa) present, narrower, not so black, with here and there some whitish edging; inner marginal and submarginal markings also much attenuated; apical area crossed by a transverse quadrimacular white ray; hind-marginal edging very narrow, the traversing streak being pure white and conspicuous; a small black spot at base of discoidal cell. *Hind-wing: varies from pale dull yellow-ochreous to deep ferruginous;* always two pale-creamy or whitish transverse bands, one near base bordered on both sides by a macular black stria, the other median, bordered inwardly by black spots, and outwardly by a fuscous line; black submarginal band very much narrowed, containing seven pairs of small white inter-nervular spots; upper part of ground-colour spots between this band and the hind-marginal border either creamy or whitish, giving the effect of a third pale transverse band; pure-white traversing streak of black hind-marginal edging broken into seven pairs of inter-nervular elongate spots; a small white-edged black spot marks upper angle of extremity of discoidal cell; *in the ferruginous-tinted specimens,* both the submarginal and hind-marginal white-spotted black bands are partly or wholly obliterated. *Cilia* as above, but brownish-fuscous replaces the black.

♀ *Paler, duller; the costal black of fore-wing and the basal black of hind-wing replaced by suffused fuscous, except the striæ and spots respectively. Fore-wing:* submarginal band united to outermost costal stria or dentation, so that in all eight instead of six spots of the ground-colour are enclosed; inner-marginal marking much attenuated. *Hind-wing:* a fuscous streak a little before submarginal band and united to it by blackish on the nervules so as to enclose seven small spots of the ground-colour. Under side.—As in ♂.

Var. A. (*Acheloïa*, Wallengr.) ♂, ♀.

♂ *Darker, more inclined to rufous. Fore-wing: costal black broader, especially its downward ray beyond discoidal cell*, which is very wide and sharply dentated externally, the outermost dentation usually joining, or almost joining, the top of submarginal band on second radial nervule; ground-colour beyond the wide downward ray extends all but to costal edge, so as to isolate subapical extremity of costal band; lower part of submarginal band much thickened at posterior angle, so as almost to obliterate the lowest enclosed spot of the ground-colour. *Hind-wing: no spots before middle;* submarginal band and hind-marginal border more developed, and united by wider nervular rays, so that spots of ground-colour are smaller. Under side.—Like that of typical form, but even more variable, *the hind-wing and apex of fore-wing being often of a pale creamy-yellowish, in which the whitish or creamy bands are indistinguishable*, but all the black markings very conspicuous; while in others every grade of deepening coloration is found as far as the same deep-ferruginous as the typical form sometimes exhibits, or even rather darker.

♀ Differs quite in correspondence with the characters just given, but is very commonly duller and more suffused in markings than the typical ♀.

[Plate V. fig. 4 (♀).

Pupa.—Dull greenish-grey, antennæ-cases pale-yellowish. Attached to middle of a leaf.

Description of a living specimen sent to me from D'Urban, Natal, by Colonel Bowker, and received on 9th December 1878. The imago emerged the next day, so in all probability the colour of the pupa was duller than at an earlier date; it was a ♂ of the *Acheloïa* variety that emerged.

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* Wallengren's *Illithya* and *Acheloïa* both belong to the variety just described, as I have ascertained from drawings of his types which Mr. W. F. Kirby showed me in 1881; the former being an example of the medium under-side coloration, and the latter one of the deep-ferruginous hue. The differences pointed out enable me to distinguish the variety from the typical form, but I think it best not to separate it as a species, for the present at any rate, as I have seen so few *Hypanis* specimens from Tropical Africa, and both forms are so extremely variable both in size and marking. It is *Ilithyia* proper which (in a smaller form with thinner black markings) extends to Ceylon and India;

it is figured by Cramer (t. 375, f. G, H) as *Polinice*.[1] The variety seems to have almost as wide a range in Africa as the typical form, but not to extend beyond the continent; *H. anvatara*, Boisd., inhabiting Madagascar and the Comoro Islands, though more nearly related to it than to *Ilithyia* proper, being, I consider, a distinct species.[2]

Many of the West-African specimens of this variety approach in appearance Cramer's figures (A and B, t. 213, and C and D, t. 214) of ♂ and ♀,[3] having the black markings strongly developed throughout; the submarginal band of fore-wing being not only continued rather widely to costa, but broadly united just above third median nervule to the broad projection of the costal bar, so as to completely isolate an oblique subapical ray of the ground-colour. I also possess a ♂ from D'Urban, Natal, in which the black hind-marginal bands are very wide, and so completely coalesce as to leave only five small spots of the ground-colour.

The specimen figured by Drury, and stated to be from "Senegal," is a large well-coloured and strongly-banded ♂, with the ground-colour of the hind-wings on the under side dull-ferruginous, yet with the white-spotted black submarginal and hind-marginal bands quite distinct though narrow. I possess a very similar ♂, taken by Mr. T. Ayres in the Transvaal in 1870, but it is not so large, and the upper-side markings are rather narrower, the base of the hind-wing being suffused with fuscous. A very small ♀ of the typical form, from Damaraland, has all the upper-side markings much attenuated, and the under side of the hind-wing uniform deep-ferruginous, except for the three white bands and narrow white black-edged hind-marginal border.

Along the Eastern Coast of South Africa it is the Variety A. which prevails; but the late Mr. M. J. M'Ken sent me a ♂ of the *Ilithyia* proper, which he took at D'Urban, and I met with one not far to the northward, in the Victoria Country. The variety is very common about D'Urban, and I took many examples there in the summer of 1867, including two pairs *in copulâ*. The sexes in each case were nearly alike, with the palest under-side colouring of the hind-wings, but the males had the faint yellow-ochreous bands rather more distinct from the general creamy-yellowish ground-colour. Colonel Bowker in 1878 and 1881 captured two quite similar pairs, and in 1880 sent me a pair with ferruginous under sides. In the latter, the ferruginous was less deep in the ♂ than in the ♀. Farther inland the typical *Ilithyia* seems to replace the variety, but it is by no means so numerous in individuals.

This very pretty butterfly, which has somewhat the look of a large *Melitœa*, frequents grassy and bushy spots on the borders of woods. It is conspicuous on the wing, flying low and not rapidly, and often settling on the ground or on the herbage. I do not recollect having seen it feeding on any flower. It comes out in the winter, but is not then so numerous as in the hotter months.

Localities of *Hypanis Ilithyia*.

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—King William's Town (*H. J. Atherstone*).
    c. Griqualand West.—Vaal River (*M. E. Barber.—Typ.*)
    d. Basutoland.—Maseru (*J. H. Bowker.—Typ.*)
  D. Kaffraria Proper.—Butterworth and Bashee River (*J. H. Bowker.—Var.* A.)

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[1] I think that Boisduval's *Polinice* (*op. cit.*), from "Senegal," is of the typical form, but as he only figures the under side, cannot be certain about it.

[2] A constant distinguishing character in *H. anvatara* is the waved and dentated form of the bands crossing the under side of the hind-wings.

[3] Cramer in his text gives ♂ for ♀ and *vice versa*.

E. Natal.
  a. Coast Districts.—D'Urban (*Typ.* and *Var.* A.) Victoria Country (*Typ.*)
  b. Upper Districts.—Greytown (*Typ.*) Estcourt (*J. M. Hutchinson.—Typ.*)
  F. Zululand.—St. Lucia Bay (*Colonel H. Tower.—Var.* A.) Napoleon Valley (*J. H. Bowker.—Typ.*)
K. Transvaal.—Potchefstroom District (*T. Ayres.—Typ.*) Marico River (*F. C. Selous.—Typ.* and *Var.* A.)

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—Damaraland (*H. Hutchinson, J. A. Bell,* and *W. C. Palgrave.—Typ.*) "Angola (*J. J. Monteiro*)."—Druce. Congo (*Coll. Brit. Mus.*) "Chinchoxo (Falkenstein)."—Dewitz.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*). "Tette (*Peters*)."—Hopffer. "Tchouacka (*Raffray*)." — Oberthür. "Mombas and Lake Jipe (*O. Kersten*)."—Gerstäcker.
    *b*1. Interior.—Kama's Country, near Bamangwato (*H. Barber.—Typ.*)
  B. North Tropical.
    a. Western Coast.—"Gaboon."—Oberthür. Cape Coast Castle (*J. M. Pask.—Var.* A.) Sierra Leone (*Col. Brit. Mus.*) "Casamanza."—Feisthamel. "Senegal."—Drury.
    b. Eastern Coast.—"Somauliland."—Felder. "Samara: Tajurrah (*J. K. Lord*)."—H. Walker. Abyssinia: "Schoa (*Antinori*)."—Oberthür; "Harkeko (*J. K. Lord*)."—F. Walker. "Atbara."—A. G. Butler. "Nubia."—Hopffer.

IV. Asia.
  A. Southern Region.—"Arabia."—Oberthür and Hopffer. India (North India): E. Ind. Mus. Madras: Brit. Mus. Ceylon (*E. L. Layard*).

GENUS NEPTIS.

Neptis, Fab., "Syst. Gloss.—Illiger's Mag., vi. p. 282 (1807);" Westw., Gen. Diurn. Lep., ii. p. 270 (1850).
Neptis and *Athyma*, Trim., Rhop. Afr. Aust., i. pp. 145, 148 (1862).

IMAGO.—*Head* broad, moderately hairy above and in front; *eyes* large, very prominent, smooth; *palpi* short, slender, acute, not rising above level of forehead, scaly, clothed beneath with rather long but not dense hair, and above with a little short hair,—second joint rather short,—terminal joint long, broad at base, but ending in a very attenuated and acute point; *antennæ* rather short, with a gradually-formed elongate but rather thick club, slightly flattened and hollowed inferiorly.

Thorax about as broad as head, rather short and weak, slightly hairy anteriorly, posteriorly, and inferiorly. *Fore-wings:* elongate, rather truncate; costa but slightly arched; apex more or less rounded; hind-margin very slightly sinuated, sometimes a little emarginate about middle; posterior angle marked; inner margin rather convex near base, but emarginate in middle; costal nervure very short, ending on costa before middle; first subcostal nervule emitted considerably, second one slightly, before extremity of discoidal cell in most species, but occasionally the latter nervule originates at a little distance beyond cell;

third subcostal nervule emitted far beyond cell and ending at apex; upper and middle disco-cellular nervules both very short (the latter inclined towards base), so that the radial nervules are closely approximated at their origin,—lower disco-cellular quite wanting; discoidal cell short. *Hind-wings:* broad, subtruncate; costa strongly arched, especially in ♂ (where the very convex margin is superiorly polished and subnacreous, and covers a corresponding similar surface on inner margin of fore-wings; hind-margin rather more sinuated than in fore-wings; anal angle not prominent; inner margins but slightly convex, forming a very incomplete and shallow groove, leaving hinder part of abdomen exposed; costal nervure usually terminating beyond middle, but rarely extending to just before apex; subcostal nervure branched very near base; upper disco-cellular nervule (forming base of radial nervule) leaving second subcostal nervule very near its origin,—lower disco-cellular quite obsolete; discoidal cell extremely short; internal nervure usually rather short, ending about middle. *Fore-legs* of ♂ very small and slender, scaly, sometimes with a very sparse external edging of minute hairs; tibia much shorter than femur; tarsus exceedingly short, blunt at extremity,—of ♀ considerably larger, almost without hairs; tarsi nearly as long as tibia, distinctly jointed, finely spinulose near and at extremity. *Middle-* and *hind-legs* rather short and stout, scaly; tibiæ strongly spinose inferiorly, and with rather long terminal spurs; tarsi densely spinulose inferiorly.

Abdomen elongate; very slender in ♂.

LARVA.—*Head* large, bifid on its summit; on back of fourth segment a pair of elongate, divergent, erect fleshy processes, set with short bristles; similar but very much smaller pairs of short processes on back of third, sixth, and twelfth segments,—the two latter pairs inclining backward; body rather attenuated posteriorly.

PUPA.—Usually much curved abdominally, thick centrally; head deeply bifid; wing-covers projecting widely on each side.

(These characters of larva and pupa are taken from figures of those of *N. Aceris*, Lepech., in Pl. V. of Horsfield and Moore's *Catal. Lep. Ins. in H.E.I.C. Museum* (1857), and of those of *N. Varmona* and *N. Jumba*, Moore, in *The Lepidoptera of Ceylon*, pl. xxviii. 1881.)

Neptis is not nearly related to any other South-African genus, but is in several respects intermediate between *Athyma* and *Limenitis*, neither of which has any African representative, although both have otherwise a very wide Old-World distribution, and *Limenitis* extends also to North America. From *Athyma*, which it most nearly resembles in colouring and pattern, *Neptis* is at once known by its far smaller thorax; while it is distinguished from *Limenitis* by its much more acute palpi; shorter, less gradually-clavate antennæ; open discoidal cell of the fore-wings; much smaller fore-legs in the ♂; and more strongly-arched costa in the hind-wings.

This is an extensive group of closely allied forms, about ninety species having been described. They are butterflies of rather small or middle size, mostly characterised by very conspicuous sharply-defined white or ochreous bands and spots on a black or fuscous ground. The metropolis of the genus is the Indo-Malayan Sub-Region, but it extends through the Austro-Malayan Islands to Australia, and in opposite directions to China, Japan, and Eastern Siberia, over the Ethiopian Region, and even to Eastern Europe,—two species (*Aceris*, Lep., and *Lucilla*, W. V.) occurring not uncommonly in many parts of South Russia, Turkey, Austria, &c.

Of the fifteen Ethiopian species known, four are apparently limited to Madagascar and the Mascarene Islands, and three to Angola; five others seem only to have occurred in Western Africa north of the Equator; while of the three remaining, all of which inhabit Southern Africa, *N. Agatha* (Cram.) appears to range throughout the Continent, *N. Marpessa*, Hopff., extends through South-Tropical Africa and on the eastern side northward to Abyssinia, and *N. Goochii*, Trim., has only been found in Natal. Of these three South-African forms, only *Marpessa* appears to penetrate the Cape Colony, a specimen having been sent to me from Port Alfred at the mouth of the Kowie River. *Agatha* is considerably the largest, and is very striking from the size of the pure-white bands. *Goochii* is the smallest, and differs from both the others in possessing a longitudinal white bar in the discoidal cell of the fore-wings.

The butterflies of this genus frequent sheltered wooded spots. *Agatha* and *Marpessa*, which I observed in Natal, and *Frobenia*, Fab., a yellow-banded species which I took in Mauritius, all have a weak but rather floating flight; they haunt a particular tree or shrub, and are fond of settling on the leaves, often keeping their wings expanded when at rest.

87. (1.) **Neptis Agatha**, Cramer.

Papilio Melicerta, Fab. [*nec* Drury], Syst. Ent., p. 508, n. 274 (1775).
Papilio Agatha, Cram., Pap. Exot., iv. t. cccxxvii. ff. A, B (1782).
Nymphalis Melicerta, Godt., Enc. Meth., ix. p. 432, n. 260 (1819).
Neptis Melicerta, Trim., Rhop. Afr. Aust., i. p. 146, n. 87 (1862).
Neptis Agatha, Hopff., Peters' Reise nach Mossamb., Ins., p. 383 (1862).

Exp. al., 2 in.—2 in. 7 lin.

Brownish-black, with a reddish gloss, with pure-white transverse bands. Fore-wing: a slightly curved, rather broad white band, composed of six contiguous spots, beyond middle, extending from costa to first median nervule not far from hind-margin; on inner margin, a little before the end of band, a semicircular white spot, crossed by submedian nervure; along hind-margin three rows of paler markings, thin, lunular, partly white, the two first spots of the innermost row being larger and whiter than the rest; between the latter row and white band is a series of rather large, almost contiguous quadrate marks, darker than ground-colour, and forming a stripe parallel to hind-margin; from three to seven pure-white dots in discoidal cell, and one or two just beyond extremity of cell. *Hind-wing:* a broad white stripe, continuous of the inner-marginal, semicircular mark on *fore-wing*, divided into seven by crossing nervules, occupies central portion from costa to inner margin, being curved, parallel to hind-margin; series of dark spots broader than in *fore-wing;* three thin, lunular, pale streaks bordering hind-margin as in *fore-wing*. *Cilia* of both wings conspicuously marked with white between denticulations. UNDER SIDE.—*Very similar, ground-colour paler. Fore-wing:* costa white close to base; a short, white, longitudinal streak from base in discoidal cell, bordering subcostal nervure; five or six white dots in cell, and a transverse row of three from costa, a little beyond cell; white band and marking as on upper side; three rows parallel to hind-margin conspicuously white, and forming almost *continuous* streaks; the three first spots of the innermost row larger than on *upper side*, longitudinally triangulate. *Hind-wing:* three white bands in basal portion—a broad one *edging costa* to a little before middle, a narrow one, parallel to the first, commencing on inner margin, and a broad one, also parallel and from inner margin, which is *broken into three spots* towards costa; central band as on *upper side;* lunulate streaks bordering hind-margin conspicuously white. *Cilia* as on *upper side*.

A very close ally of *N. Agatha* is *N. Nysiades*, Hewits. (*Exot. Butt.*, iv. pl. 25, ff. 3, 4), from Old Calabar; but it differs in having the lower portion of the band of the fore-wings much narrowed and divided into two entirely separate spots; it has, moreover, in discoidal cell of fore-wing on upper side only a white dot and oblique line; and on under side, besides the longitudinal streak from base, only two oblique streaks.

Neptis Kikideli, Boisd., from Madagascar, is also nearly related to *N. Agatha*, but at once recognised by its very broad white bands (scarcely indented externally by black nervules) across hind-wings and lower discal area of fore-wings.

A *Neptis* taken by Colonel Bowker at Quilimane, in the year 1878, is to some extent intermediate between *Agatha* and *Kikideli*, having the bands in arrangement like those of the former, but markedly broader, and externally not more indented by black nervules than those of the latter.

This strikingly-marked *Neptis* frequents wooded places; it flies rather slowly, and often settles on the leaves of low trees. I once took a specimen on the flowers of *Lantana*. It was far from numerous on the coast of Natal during the summer of 1867, and does not appear ever to be abundant there.

Localities of *Neptis Agatha*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban. Verulam. Tongaati River. Morewood's Bay (*J. H. Bowker*). "Lower Umkomazi."—J. H. Bowker.
  K. Transvaal.—Lydenburg District (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola: Loanda (*R. Meldola*)."—A. G. Butler. "Congo: Kinsembo (*H. Ansell*)."—A. G. Butler. "Chinchoxo (*Falkenstein*)."—Dewitz.
    b. Eastern Coast.—Zambesi (*Rev. H. Rowley*).—Coll. Hope, Oxon. "Querimba."—Hopffer. "Zanzibar (*Raffray*)."—Oberthür.
    b1. Interior.—Mashunaland and Zumbo, Zambesi (*F. C. Selous*).
  B. North Tropical.
    a. Western Coast.—Cape Coast Castle (*E. Bourke*). Ashanti.—Coll. Hope, Oxon. Sierra Leone.—Coll. Brit. Mus.
    b. Eastern Coast.—"Abyssinia: Shoa (*Antinori*)."—Oberthür.

88. (2.) **Neptis Marpessa,** Hopffer.

Neptis Marpessa, Hopff., Monatsb. K. Ak. Wiss. Berl., 1855, p. 640, n. 8; and Peters' Reise nach Mossamb., Ins., p. 383, t. xxiv. ff. 9, 10 (1862).

Athyma Saclava, Trim., Rhop. Afr. Aust., i. p. 148, n. 88 (1862); and (*Neptis S.*) ii. p. 338 (1866).

Exp. al., 1 in. 7½ lin.—2 in.

Brownish-black, with white bands and spots. Fore-wing: on costa beyond middle, not far from apex, three white spots of moderate size, forming a short band inclining towards hind-margin; below them, between first and third median nervules, a large, somewhat quadrate, white spot, divided almost equally by the second median nervule; immediately below the latter marking, and a little nearer base, is a semicircular, moderately-sized, white marking on inner margin; *in* discoidal cell three white dots; *at its extremity* a dark-margined, pale, transverse streak; *just beyond* extremity, three white dots; bordering hind-margin, three parallel rows of whitish lunules, the outer row very indistinct or even obsolete; between the innermost of these lunular rows and the large white spots is a row of spots *darker* than the ground-colour; close to the outer edge of the white spots are a few minute, white, thin spots, two or three of which are situate *between* the large white markings. *Hind-wing:* a compact rather narrow white band, almost straight on its *inner* edge, crosses about middle, from costa to inner margin, and is continuous of the semicircular marking on inner margin of *fore-wing;* row of darker spots as in *fore-wing*, but more distinct; rows of lunular marks almost obsolete. UNDER SIDE.—*Pale-ochreous, varied with ferruginous-brown;* white bands and spots as on upper side. *Fore-wing:* costa at base ochreous-white; four whitish-brown margined spots in discoidal cell, and a streak similarly coloured at its extremity; portion around large white spots ferruginous-brown, with blackish rays *between nervules;* row of darker spots, beyond white ones, blackish; between the rows of white lunules bordering hind-margin are parallel dark-brown streaks. *Hind-wing:* basal portion pale-whitish ochreous, varied with ferruginous-brown striæ and marks, darker macular row, and lunular lines, as in *fore-wing.*

This species is readily distinguished from *N. Agatha* by its smaller size, browner ground-colour, much broken and macular white marking of fore-wing, and totally different under-side colouring. It is a very close ally of *N. Saclava*, Boisd., from Madagascar; but, as Hopffer (*loc. cit.*) points out,[1] appears to differ in having three white dots just beyond discoidal cell of fore-wing, and the row of fuscous spots common to both wings followed by three rows of whitish lunules; *Saclava* wanting the former altogether, and instead of the latter, possessing two or three rows of blackish lunules separated (in the fore-wing only) by a thin white line.

Another near ally is the West-African *N. Nemates*, Hewits. (*Exot. Butt.*, 1868, iv. pl. 25, f. 1, 2), which differs from *Marpessa* in having the large white spot on median nervules of fore-wings and the inner-marginal spot united and much widened, so as to form a short irregular band; while on the under side the tint of the ground-colour is much duller and greyer, and there are no white spots in or just beyond discoidal cell.

I met this butterfly not uncommonly at Port Natal in February, March, and April 1867. Its habits are quite like those of its congener, *N. Agatha*; it frequents wooded spots, and flits slowly about trees and shrubs, often settling upon the leaves.

Localities of *Neptis Marpessa*.

I. South Africa.
  B. Cape Colony.
    b. Eastern Districts.—Port Alfred, Kowie River (*J. H. Randall*).
  D. Kaffraria Proper.—Tsomo River (*J. H. Bowker*).
  E. Natal.—D'Urban. "Lower Umkomazi."—J. H. Bowker.
  F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).
  H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola (*J. J. Monteiro*)."—Druce. "Chinchoxo (*Falkenstein*)."—Dewitz.
    b. Eastern Coast.—"Zambesi: Tette."—Hopffer.
  B. North Tropical.
    b. Eastern Coast.—"Abyssinia: Atbara."—Butler.

89. (3.) **Neptis Goochii**, Trimen.

PLATE V. fig. 6 (♂).

Neptis Goochii, Trim., Trans. Ent. Soc. Lond., 1879, p. 336.

Exp. al., 1 in. 4½ lin.—1 in. 9 lin.

Fuscous, with pure-white bands and spots. Fore-wing: a longitudinal white bar, divided transversely about its middle, occupying lower half of discoidal cell; a small spot immediately beyond extremity of cell; subapical costal bar broad, even, abruptly truncate on radial nervule; close to outer extremity of this bar a small spot, in a longitudinal line with that just beyond extremity of cell; large spot on disc between third and first median nervules about the same size as costal bar, but less elongate and more rounded; inner-marginal marking rather small, acuminate superiorly; five almost parallel, thin, submarginal white streaks, of which the innermost is indistinct and more widely separated from the rest, more irregular, and the outermost also indistinct. *Hind-wing:* central band broad, even, extending to inner-marginal edge but not to costa, being abruptly rounded off just below the first subcostal nervule; five submarginal streaks much as in fore-wing, but more distinct, the innermost less irregular and more remote from the second. UNDER SIDE.—Ground-colour much paler, almost grey; markings corresponding with those of upper side, but submarginal streaks broader and more conspicuous. *Fore-wing:* cellular longitudinal bar not, or but very indistinctly, transversely divided. *Hind-wing:* basal portion with three curved transverse white stripes (much as in *N. Agatha*, Cramer, but not nearly so conspicuous), of which the first is on costal edge, and the third near central band, and less distinct than the others.

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[1] I have compared Boisduval's description and Chenu's figure of *N. Saclava*, but the only note I have of the Madagascar specimens in Mr. Hewitson's collection (in the year 1867) is that *the band of the hind-wings was broader* than in the Natalian butterfly then associated with them.

This butterfly is allied to *N. Melicerta*, Drury (*nec* Cramer), and to *N. Marpessa*, Hopff., but is considerably smaller than those species. It agrees with the former insect in possessing the longitudinal white bar[1] in the discoidal cell of the fore-wings (which character at once separates it from *Marpessa*), but differs markedly (1) in *the short, compact, undivided costal bar of the fore-wings;* (2) *in the broad, even, superiorly-rounded band of the hind-wings;* and (3) in having *four* (instead of three) parallel hind-marginal white lines. Other characters separating it from *Marpessa* are the small size and acuminated form of the inner-marginal white marking of the fore-wings, and the entirely different colouring and pattern of the under side.

Mr. W. D. Gooch, after whom I have named this species, met with four specimens in the neighbourhood of his plantation (Spring Vale) on the coast of Natal. No other examples came under my notice until Colonel Bowker sent one taken near D'Urban in December 1879, and again, in June 1881, forwarded four others captured in the same locality. Nothing special in the habits of the butterfly has been noted by either observer; and it is not unlikely that *N. Goochii* may often be passed over in mistake for *N. Marpessa.*

Localities of *Neptis Goochii.*

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban (*J. H. Bowker*). Little Umhlanga (*W. D. Gooch*).

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[1] In four of Colonel Bowker's specimens the inner portion of this bar is almost obsolete.

GENUS DIADEMA.

Diadema, Boisd.,[1] "Voyage de l'Astrolabe—Lep., p. 135 (1832)," and Faune Ent. de Madag., p. 39 (1833); Westw. ("Section A. Sub-Section *a*, Divn. *," of Diadema), Gen. Diurn. Lep., ii. pp. 279–280 (1850); Wallace, Trans. Ent. Soc. Lond., 1869, p. 277; Trim. (part), Rhop. Afr. Aust., i. p. 150 (1862).

IMAGO.—*Head* large, as wide as thorax, densely hairy and scaly, and with a long tuft of hairs in front; *eyes* large, prominent, smooth; *palpi* rather stout, elongate, widely separated, divergent, porrected horizontally, not rising above middle of eyes, densely scaly,—second joint long, with a dense fringe of short, stout hairs superiorly and internally,—terminal joint of moderate length and rather broad, with the tip rather blunt; *antennæ* rather short, slender, with an abruptly-formed, subovate, slightly-flattened club, bearing a minute acute point at its extremity.

Thorax moderately stout, clothed beneath and anteriorly above with short hair, posteriorly above with long hair. *Fore-wings* elongate, produced apically; costa considerably arched; hind-margin concave about middle, slightly sinuated; posterior angle prominent but rounded; inner margin slightly emarginate in middle; costal nervure strong, terminating at some distance beyond middle; first and second subcostal nervules arising not far from each other, a little before extremity of discoidal cell,—third at a considerable distance beyond cell, and terminating at apex; upper disco-cellular nervule very minute,—middle one rather short, very strongly curved or bent towards base of wing inferiorly,—lower one well developed, rather long, slightly curved, united to third median nervule at a little distance beyond its origin; discoidal cell rather short, truncate. *Hind-wings* broad, rounded, somewhat truncate; costa very convex close to base, thence moderately arched; hind-margin sinuated; anal angle marked, rather prominent; inner margins strongly convex to considerably beyond middle, forming a broad, deep groove completely receiving abdomen, thence markedly divergent; costal nervure extending to apex; discoidal cell very short; upper disco-cellular nervule (forming base of radial nervule) united to second subcostal nervule not far from the latter's origin,—lower one very slender but quite distinct, slightly angulated towards base of wing, joining median nervure at or a little before origin of second and third nervules; internal nervure rather short, terminating just at end of convexity of inner margin. *Fore-*

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[1] Mr. W. F. Kirby (*Syn. Cat. Diurn. Lep.*, 1871, p. 224) has abandoned *Diadema* as a name preoccupied, and has substituted for it Hübner's title of *Hypolimnas*. It is true that the name *Diadema* was proposed by Schumacher in 1817 for a genus of Cirripede Crustacea, but it has not been adopted in that class, being synonymous with Lamarck's genus *Coronula*, founded in 1802. (See Darwin, *Monogr. Cirrip.*, 1854, p. 397.)

legs of ♂ small and slender; femur clothed with long hair inferiorly,—tibia and tarsus fringed with short hair; of ♀ not very much larger, but throughout with much scantier hair; tarsus much better developed, indistinctly articulate, spinulose at extremity. *Middle* and *hind legs* of moderate length, rather thick, scaly; tarsi with two rows of strong spines beneath and a few small ones above,—the terminal spurs long and strong; tarsi spiny, especially beneath, where the spines at end of each joint are longer than the rest.

Abdomen of moderate length, rather stout.

LARVA.—Rather tapering towards head, armed with stout, rigid, branched spines; head with two erect, elongate, spinose horns.

PUPA.—Thick, rounded, more or less constricted at junction of thorax and abdomen; head very bluntly bifid, not prominent; dorso-thoracic prominence rather elevated posteriorly; wing-covers bi-angulated laterally at and near bases, somewhat projecting at apices; abdomen strongly arched; back of thorax with three very small acute tubercles on each side; back of abdomen with three rows of larger very acute tubercles, and each side with two rows of very small or minute ones.

PLATE I. fig. 5.

Of this genus, as restricted by recent authors, only one species, the well-known *D. Misippus* (Linn.)—long called by the name of its near ally, *D. Bolina* (Linn.)—occurs in South Africa. It is rather a large butterfly, expanding over three inches; the male being of remarkable beauty and instantly recognised by the large purple-ringed white spot which adorns the black upper surface of each wing, while the entirely different female is coloured with reddish-ochreous in close imitation of *Danais Chrysippus*. As will be seen from the list of localities given below, this species has an immense range over the warmer regions of the globe; but I think Mr. Wallace (following Westwood, *loc. cit.*) inaccurately—in his *Notes on Eastern Butterflies* in the *Transactions of the Entomological Society of London* for 1869, p. 280—gives it as a native of Australia. Except in copying the varieties of *Danais Chrysippus*, the female *Diadema Misippus* cannot be termed very variable; but the female of the closely related *D. Bolina* is one of the most unstable forms known, exhibiting such numerous variations that quite a formidable array of different names has been assigned to it by various authors. The geographical distribution of this *Diadema* is also extremely wide, including India, the whole Malayan Archipelago, Australia, and many islands of the Pacific, but not any part of Africa.

As Mr. Wallace, however, points out, these two *Diademæ* stand alone in their enormous range, the great majority of the genus occurring in the Austro-Malayan Islands only, while six or seven are described from Polynesia. Besides *Misippus*, the Ethiopian Region yields only three other species, but these are peculiar to it, viz., *D. Salmacis* (Drury), reputed (but I believe erroneously) to have occurred in South Africa;[1] *D. Monteironis*, Butl., from Old Calabar and Angola, allied to *Salmacis;* and the very distinct *D. Dexithea*, Hewits., a native of Madagascar.

An even more striking case of mimicry than that of *Danais Chrysippus* by *Diadema Misippus* ♀ occurs in this genus, and has been well described by Mr. Wallace (*loc. cit.*, p. 287). It is that of the Indo-Malayan *D. anomala*, Wall., where, in reversal of the rule among butterflies, the male is dull-brown, while the female is glossed with rich purplish-blue, in simulation of the protected and abundant *Euplœa Midamus* (Linn.)

In *Diadema*, the head, the prothorax, and the sides and under part of the mass of the thorax are marked with conspicuous white spots.

90. (1.) **Diadema Misippus**, (Linnæus).

♀ *Papilio Misippus*, Linn., Mus. Lud. Ulr. Reg., p. 264, n. 83 (1764); and Syst. Nat., i. 2, p. 767, n. 118 (1767).
♂ *Papilio Bolina*, Dru., Ill. Nat. Hist., i. pl. xiv. ff. 1, 2 (1770).
,, ,, Cram., Pap. Exot., i. t. lxv. ff. E, F (1779).
♀ *Papilio Diocippus*, Cram., *op. cit.*, t. xxviii. ff. B, C.
♀ *Nymphalis Misippe*, Godt., Enc. Meth., ix. p. 394, n. 153 (1819).
♂ ♀ *Diadema Bolina*, Boisd., Faune Ent. de Madag., &c., p. 39, n. 1 (1833).
♀ Var. *Papilio Inaria*, Cram., *op. cit.*, t. ccxiv. ff. A, B (1782).
♂ ♀ *Diadema Bolina*, Trim., Rhop. Afr. Aust., i. p. 153, n. 91 (1862).
♂ ♀ *Diadema Misippus*, Hopff., Peters' Reise nach Mossamb., Ins., p. 385 (1862).
,, ,, Trim., Trans. Ent. Soc. Lond., 1870, p. 356.

LARVA AND PUPA.
(*Cingalese*) Moore, Lep. Ceylon, pl. 29, f. 1*c* (1881).

Exp. al., 2 in. 7 lin.—3 in. 7 lin.

♂ *Black, with white, violet-shot, large spots. Fore-wing:* just beyond extremity of discoidal cell, a transverse, rather large, elongate, subovate, obliquely-lying, white marking, shot with blue-violet (forming in certain lights a lustrous circle on the black ground-colour around the white), crossed by four nervules, and extending from near costa to below second median nervule; a similar, much smaller spot, crossed by two nervules, close to apex. *Hind-wing:* a large, central, circular, white marking, violet-ringed like those in *fore-wing;* two or three small, indistinct, thin, bluish lunules, close to anal angle. *Fringes* of both wings *very short*, black, varied with white in indentations of margin. UNDER SIDE.—*Fore-wing:* large white markings as on *upper side*, but *not* violet-ringed; costa thinly dusted with white as far as larger white marking; three small white spots immediately below subcostal nervure; a space of rich *chocolate-red*, from base, occupies nearly whole of cell, extending a little below it; apical portion shining brownish-ochreous; white spot at apex commencing a row of white dots, parallel to hind-margin, only a few of which are apparent; two parallel rows of conspicuous white lunules along hind-margin, which is black; immediately before larger white marking, and sometimes touching it, is a small, narrow, irregularly-shaped white mark on costa. *Hind-wing:* shining brownish-ochreous; tinged with chocolate-red near anal angle, and on costa near base; large central spot extended into a very broad, white, median band, from costa to inner margin, edged with black *inwardly* from costal nervure, and containing an elongate black spot, close to costa a little beyond middle, and a black streak on inner margin before anal angle; hind-marginal black broader than in *fore-wing*, its two rows of white lunules larger and more conspicuous; parallel to hind-margin a row of rather distinct white dots.

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[1] I included this very fine species, which expands 4¼ inches, in *Rhopalocera Africæ Australis* (i. p. 151), on the strength of its being included by Boisduval as among Delegorgue's captures at "Port Natal;" but as no other Natalian or South-African example has ever been forthcoming, it is probable that some mistake occurred, and I have withdrawn the species from this work.

♀ *Dull reddish-ochreous. Fore-wing:* apical half of wing blackish, narrowing to a very thin bordering at base and anal angle, containing an oblique pure-white stripe from costa, consisting of four moderate-sized spots (of which the lowest is separate from the rest), and almost reaching hind-margin; two rows of whitish lunules border hind-margin, as on under side of ♂, but not so distinct; close to apex, a narrow white stripe, composed of three small spots, almost parallel to the larger stripe, with a white dot a little *below* it. *Hind-wing:* a dusky-blackish spot on costa, a little beyond middle, as in ♂ on under side, but much *broader;* a rather narrow, blackish border to hind-margin, containing a row of more or less distinct, whitish lunules, and the indications of a similar row before the outer one; faint-bluish tinge at anal angle as in ♂. UNDER SIDE.—Considerably like that of ♂, particularly the fore-wing. *Fore-wing:* white stripes as on *upper side;* white spots below subcostal nervure as in ♂; dull-red from base much *paler* than in ♂, tinged with ochreous, and occupying whole of inner margin (where it is very pale), only leaving a narrow band of blackish, from base to anal angle, before larger white stripe; apical portion, beyond larger stripe, shining yellow-ochreous; hind-marginal lunules as in ♂. *Hind-wing:* shining yellowish-ochreous; a whitish central shade indicates position of white transverse band; blackish costal spot as on *upper side;* a blackish mark at base, on costal nervure; and another, larger, irregular, blackish mark at extremity of discoidal cell on discoidal nervure; hind-marginal border as in ♂, as well as row of white dots parallel to it.

VAR. ♀ (*D. Inaria*, Cram.)—*A suffusion of the reddish-ground-colour covers apex*, only leaving costa and hind-margin blackish; *the apical and subapical white stripes being also obliterated* with the same hue.

Between the *Inaria* form and the ordinary ♀ very numerous gradations appear, some examples retaining part of the apical blackish as well as the white markings, others presenting the white markings only, and some again exhibiting merely a part of the latter in varying degrees of distinctness.

The ♀ often presents a whitish suffusion on the disc of the hindwing, chiefly about the median nervure and its nervules; this seems to be more frequent in the *Inaria* form and the specimens more or less approaching it.

LARVA.—Fuscous-brown on back; sides dull-greenish, with two longitudinal dull-red streaks (of which the upper one is the broader); all the legs red. Head dull-red, with two rather long, divergent, spinose, black horns. Body beset throughout with blackish branched spines, tinged with pale-red at their bases. Feeds on *Portulaca oleracea* and *P. quadrifida* (M. E. Barber).

PUPA.—(Plate I. fig. 5.) Brownish yellow-ochreous, varied with very dark-brown; abdominal segments rather closely ringed with fine fuscous parallel lines; back of thorax irregularly patched with very dark-brown; wing-covers all dark-brown except for some ochreous spotting near extremity.

The above description of the *larva* is from a drawing sent to me by Mrs. Barber in the year 1867; that of the *pupa* is from a specimen I obtained at Maritzburg, Natal, in April of that year, and from two others (which produced respectively a ♂ and a ♀ of the *Inaria* form) sent to me in March 1870 by Colonel Bowker from Maseru, Basutoland. One of the latter is represented in my figure.

Judging from the figures given in Moore's *Lepidoptera of Ceylon*, the Cingalese *larva* is of much duller colouring, the back and upper sides being given as ochreous-brown, the lower sides very dark-brown; the head and pro-legs dull ochre-yellowish, and the spines of the body almost the same colour but paler. The Cingalese *pupa* is also darker and more uniform in colouring; but the South-African one is variable in this respect, a figure of Mrs. Barber's representing it as of a pale greyish-brown without dark variegation.

This well-known and widely-ranging species is generally distributed over South Africa, except in the S.W. of the Cape Colony, where it only occurs as a straggler, a few examples even reaching Cape Town in seasons when the insect is numerous. The ♂ varies scarcely at all, except in size and in the depth of the under-surface colouring, while the ♀, as above noted, is highly variable within certain limits. *Misippus* is a bold and active insect, frequenting flowers in gardens and open spots, and often settling on the ground. The latter habit is more practised by the ♂, who thus shows off his expanded purple-ringed wings to much advantage. Colonel Bowker has noted, near D'Urban, with what persistence a ♂ will continue to occupy one particular spot. In one instance, when a ♂ so guarding a little space of about ten yards square, and beating off other ♂s who intruded, was captured, Colonel Bowker found, the next day, that another ♂ had taken possession of the vacant station. He suggests that possibly the presence of a ♀ pupa almost ready to emerge as imago may be the explanation; and the similar cases recorded (*cf.* those of *Papilio Demoleus* and *Heliconius Charitonia* mentioned in *Proc. Ent. Soc. Lond.*, 1882, p. iv.) render this not improbable.

The ♂ (as noticed by Colonel Bowker in 1863), when in pursuit of the ♀, keeps a little below her, with his wings constantly and rapidly quivering; while the ♀ slowly rises, with little motion of the wings, towards the summit of some adjacent tree. I observed the same habit in Natal.

The imitation of *Danais Chrysippus* (Linn.) by the ♀ *Diadema Misippus* is one of the most exact and unmistakable cases of mimicry known, and is the more striking from the extreme dissimilarity of the ♂ *Diadema.* The obvious intention of the mimicry is demonstrated by the singular fact that the very variations of the *Danais* are correctly reproduced by the ♀ *Diadema,* viz., the failure of the ordinary black and white at the apex of the fore-wings, and the suffusion of white on the disc of the hind-wings.[1] In life the imitation is singularly deceptive, as well when the butterfly is settled on flowers as when it is on the wing; and it requires a keen eye and close observation to distinguish one insect from the other. I once noticed at Port Natal a *Chrysippus* for a long time pursue a ♀ *Misippus,* and have little doubt that the former mistook the latter for a female of its own species.

Mrs. Barber notes that the larvæ of *Misippus,* however unlike in colouring to their food-plants, are really protected by their appearance, the species of *Portulaca* on which they live being prostrate in habit, with their stems often half-hidden in the soil; and the larvæ being thus, when feeding, as much on the dark earth as on the plants.

She adds that the pupæ are not suspended, but simply concealed among dry leaves on the ground; but there seems to be variety of habit in this particular, Colonel Bowker reporting that the two pupæ he sent to me from Basutoland were found suspended by the tail in clefts of rocks.

D. Misippus has a very wide range, being found throughout the countries inhabited by *Danais Chrysippus* (with the single exception of the European shore of the Mediterranean), and apparently occurring also in several parts of South America and the West Indies.

Localities of *Diadema Misippus.*

- I. South Africa.
  - B. Cape Colony.
    - *a.* Western Districts.—Cape Town. Swellendam (*T. Cairncross*). Knysna. Plettenberg Bay. Oudtshoorn (*Adams*).
    - *b.* Eastern Districts.—Uitenhage. Grahamstown. Kowie River (*Sir A. Scott*). King William's Town (*W. S. M. D'Urban*). Burghersdorp (*D. R. Kannemeyer*). Colesberg (*A. F. Ortlepp*).
    - *d.* Basutoland.—Maseru (*J. H. Bowker*).
  - D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  - E. Natal.
    - *a.* Coast Districts.—D'Urban. "Lower Umkomazi."—J. H. Bowker.
    - *b.* Upper Districts.—Pietermaritzburg. Estcourt (*J. M. Hutchinson*).
  - F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).
  - K. Transvaal.—Potchefstroom District (*T. Ayres*). Limpopo River (*F. C. Selous*).
  - L. Bechuanaland.—Motito (*Rev. J. Frédoux*).

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[1] Colonel C. Swinhoe (*Proc. Zool. Soc. Lond.*, 1884, p. 505) notes that at Kurrachee the ♀ *Diadema* mimics the variety *Dorippus* more commonly than the typical *Chrysippus.*

II. Other African Regions.

A. South Tropical.

a. Western Coast.—Damaraland (*C. J. Andersson* and *J. A. Bell*). "Angola (*J. J. Monteiro*)."—Druce. "Congo: Kinsembo (*H. Ansell*)."—Butler. "Chinchoxo (*Falkenstein*)."—Dewitz.

aa. St. Helena (*Miss Shortis*). "Ascension (*Bewicke*)."—Mrs. Wollaston.

b. Eastern Coast.—Zambesi (*Rev. H. Rowley*). "Tette."—Hopffer.

*b*1. Interior.—Bamangwato District (*H. Barber*). Tauwani and Tati Rivers (*F. C. Selous*). "Zambesi: Victoria Falls (*F. Oates.*)"—Westwood.

bb. Mauritius.—"Madagascar and Bourbon."—Boisduval. "Rodriguez (*G. Gulliver*)."—Butler.

B. North Tropical.

a. Western Coast.—"Gaboon (*Theorin*)."—Aurivillius. Ashanti.—Coll. Brit. Mus. Sierra Leone (*J. M. Pask*).

b. Eastern Coast.—"Somauliland."—Felder. "Abyssinia (*Raffray*); and Shoa (*Antinori*)."—Oberthür. "Abyssinia: Atbara."—A. G. Butler.

IV. Asia.

A. Southern Region.—India (North India: Canara.—Coll. E. Ind. Mus.) Madras: Bangalore (*R. G. Southey*). Ceylon (*E. L. Layard*). "China."—Boisduval. "Formosa."—Wallace.

B. Malayan Archipelago.—Java: Borneo.—E. Ind. Mus. "Lombock, Timor, Celebes."—Wallace.

VI. America.—"Guiana."—Boisduval. "Surinam."—Cramer and Drury. "Cayenne."—Godart. "Para (*Berlin Mus.*)."—Hopffer. "St. Christopher's."—Drury. Antigua.—Hewitson Coll.

Genus EURALIA.

Euralia ("Sect. B. Sub-Sect. a," of *Diadema*), Westw., Gen. Diurn. Lep., ii. p. 281 (1850).

Diadema (part), Trim., Rhop. Afr. Aust., i. p. 150 (1862).

Imago.—Intimately allied to *Diadema*. *Head* narrower; antennæ considerably longer, with the club gradually-formed and elongate. *Hind-wings:* with discoidal cell open,—the lower disco-cellular nervule entirely wanting.

Larva.—As in *Diadema*, but apparently thicker.

(In Mr. W. D. Gooch's series of drawings and notes there are two pencil outlines and written details of a larva stated to have resulted in "*Euralia mima* or *E. dubia*." The attenuation of the two segments next the head is represented as more abrupt from the general thickness of the body than is usual in *Diadema*. The colouring is noted as velvety-black, with the spines springing from narrow white rings.)

It is with very great hesitation that I have allowed *Euralia* generic rank, as I can discover in the perfect insect no constant structural distinctions from *Diadema* except those above noted. The section or sub-section was defined by Westwood for the two West-African species *D. dubia* (Pal. de Beauv.) and *D. Anthedon*, Doubl.; and the seven species—five being near allies of the former and two of the latter—which have since been described are all confined to the Ethiopian Region. Of these, one, *E. Drucei* (Butl.),[1] belonging to the *Dubia* section, inhabits Madagascar; three, viz., *Dubia, Dinarcha,* Hewits., and *Anthedon,* belong to Tropical Western Africa north of the Equator; *Damoclina,* mihi, is found in Angola; *Usambara,* Ward, an ally of *Anthedon,* was discovered in Eastern Africa a few degrees south of the Equator; and *Mima,* Trim., *Wahlbergi,* Wallengr., and *Deceptor,* Trim., seem to be limited to Natal and Zululand. All the species have a peculiar *facies,* six of them very closely mimicking the same number of the Danaine genus *Amauris* inhabiting their respective localities, and the remainder being probably imitative (less perfectly) of some of the same kinds of *Amauris,* or possibly of certain forms of that genus not yet known. It is worthy of remark that while in *Diadema* close mimicry of other butterflies is confined to the female, in *Euralia* both sexes are equally well disguised.

Although the *Anthedon* section, with its broad white patches, has so different a superficial aspect from that of the *Dubia* section, in which the white or yellowish spots of the fore-wing are small, all the forms known are really most intimately related. The white spotting of the head and thorax is identical in all; and the fact of a male *Mima* having been taken paired with a female *Wahlbergi* is a further indication of the close alliance existing between the sections.

The few specimens of the two last-named species that I observed in Natal were confined to the outskirts of woods, where they frequented low trees; their flight was slower and more floating than that of *Diadema Misippus.* All the three South-African forms present striking instances of mimicry; *E. mima* copying the Natalian variety of *Amauris Echeria, E. Wahlbergi* most exactly simulating *A. dominicanus,* and the very rare *E. deceptor* very closely resembling *A. Ochlea.*

91. (1.) **Euralia Wahlbergi,** (Wallengren).

PLATE VI. fig. 2 (♂).

♂ *Diadema Wahlbergii,* Wallgrn., K. Sv.-Ak. Handl., 1857,—Lep. Rhop. Caffr., p. 27, n. 1.

♂ *Diadema Anthedon,* Trim. [part], Rhop. Afr. Aust., i. p. 152, n. 91 (1862); Trans. Linn. Soc., xxvi. pp. 511–512 (note) (1869); and Trans. Ent. Soc., 1873, p. 106, 107 (note) [♂, ♀].

Euralia Anthedon, Doubl., Var. *marginalis,* Butl., Ann. and Mag. Nat. Hist., 1875, p. 395.

Exp. al., 3 in. 4 lin.—4 in. 1 lin.

♂ *Black, with large patches of iridescent white. Fore-wing:* an elongate, more or less distinct, longitudinal-oblique white streak in discoidal cell; a broad, oblique, white stripe beyond middle, not reaching to costa or to hind-margin, crossed by three nervules; a large, somewhat semicircular white blotch occupies nearly the whole of inner margin, rising as far as median nervure, but not quite to its second nervule. *Hind-wing:* iridescent white; basal portion blackish; a broad black band along hind-margin, wider and suffused with brownish about anal angle, radiating in streaks *between* nervules. UNDER SIDE. —*Paler:* similar in pattern. *Fore-wing:* a small white spot at base; another on costa, near base; a third in discoidal cell, *before* the white streak; costa tinged with ochreous-brown, as well as apical portion beyond oblique white band. *Hind-wing:* hind-marginal band coloured with ochreous-brown, very much *narrower* than on *upper side*, radiating very distinctly between nervules; a conspicuous white spot on narrow basal black. On *both wings* are the traces of a double row of minute whitish lunules along hind-margin, and in *hind-wing* a submarginal series of rather indistinct white minute spots in fuscous rings situated on the inter-nervular blackish rays.

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[1] Mr. Butler (*Trans. Ent. Soc. Lond.,* 1874, p. 426) gives this form—which appears to be the *Diadema dubia* described by Boisduval in *Faune Ent. de Madag.,* p. 40—as a *Panopea;* but there can be no doubt that it is really referable to *Euralia.*

♀ *Similar to the ♂, but all the white markings larger*, especially the cellular streak and the subapical stripe. *Fore-wing:* a small spot in discoidal cell corresponding to that of the under side. UNDER SIDE.—Hind-marginal lunules more pronounced,—those of the fore-wing tinged with blue.

This is a very near ally of *E. Anthedon*, Doubl., a native of Western Africa, being indeed its Southern representative. The principal differences presented by *Wahlbergi* are (1) its considerably larger size (*Anthedon* not appearing to exceed 3 in. 8 lin. in expanse of wings), and (2) its larger white markings, especially as regards the hind-wing, where in *Anthedon* the white extends to but little beyond the middle. These differences exactly correspond to those which distinguish the South-African *Amauris dominicanus*, Trim., from the West-African *A. Niavius* (Linn.); and *E. Wahlbergi* is as accurate a mimicker of the former as *E. Anthedon* is of the latter species of *Amauris*.

I met with this very conspicuous butterfly at D'Urban, Natal, in February, March, April, and June; but it was always scarce, and I captured four specimens only. It is a woodland insect, and is fond of floating about low trees, quite in the manner of the *Amauris* it so closely resembles. The imitation is so exact, that, prior to actual examination of a captured individual, I found it impossible to tell whether I was taking the *Euralia* or the *Amauris*. The late Mr. M'Ken sent several specimens to the South-African Museum, all taken in the D'Urban Botanic Gardens; and Colonel Bowker has since forwarded a few from the same neighbourhood. Of the latter, one remarkably small ♂ is only 3 in. 1 lin. in expanse of wings. I have recorded (*Trans. Ent. Soc. Lond.*, 1873, p. 107, *note*) the capture by Captain H. C. Harford of a ♀ of this butterfly paired with a ♂ *E. mima*, Trim. Notwithstanding the very different pattern and colouring of the wings, the two forms are very closely related.

Localities of *Euralia Wahlbergi*.

I. South Africa.
    E. Natal.
        a. Coast Districts.—D'Urban. Little Umhlanga (*H. C. Harford*). "Lower Umkomazi."—J. H. Bowker.
    F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).

92. (2.) **Euralia mima**, (Trimen).

Diadema mima, Trim., Trans. Linn. Soc. Lond., xxvi. p. 506, note (1869); and Trans. Ent. Soc. Lond., 1873, p. 107 (notes).

Exp. al., 3 in. 3 lin.—4 in.

♂ *Sooty-black, with slightly-iridescent white spots; hind-wing with a pale ochrey-yellow patch. Fore-wing:* the following white spots, viz., towards middle an oblique row of two—one thin, elongate, almost longitudinally placed, in discoidal cell near the extremity, the other much larger, subovate, farther from base, between first and second median nervules; a nearly parallel oblique subapical row of three, about midway between the first row and apex, consisting of two small rounded spots close together near costa, and a larger, inferior, irregularly subovate one just above third median nervule; and a submarginal row of seven small round ones, of which the first and seventh are largest, and the fourth and fifth minute or obsolete. *Hind-wing:* yellow patch occupying basal and central area, commencing very near base, rounded superiorly, rising more or less above subcostal nervure, extending to rather beyond middle on disc and also to inner margin, having its outer limit rather ill defined, and more or less penetrated by inter-nervular black rays from hind-margin; nervures crossing yellow patch black; a submarginal row of five small round white spots, of which the lowest (between first and second median nervules) is tinged with yellow. *Cilia* black, with small but very distinct inter-nervular white spots. UNDER SIDE.—*Hind-wing and apical area of fore-wing pale ochreous-brown with a tinge of grey;* markings like those of upper side. *Fore-wing:* a small white spot in discoidal cell, before the first of the oblique median row; three still smaller ones close to base,—two on costa and one at origin of subcostal and median nervures; on costa, immediately above first spot of subapical row, a narrow white mark; submarginal row of seven spots, usually complete,—often a minute additional spot just above the first; from anal angle to lower radial nervule a double row of bluish-white lunules along hind-margin. *Hind-wing:* ochrey-yellow patch paler, smaller, its exterior outline better defined but irregular; spots of submarginal row larger, better defined—a sixth sometimes present below first median nervule; a double row of white lunules usually well marked along all the hind-marginal border; inter-nervular black rays well-defined; base narrowly black, with two small white spots,—one close to origin of precostal and costal nervures, the other at origin of subcostal and median nervures.

♀ *Similar to ♂, but the white spots of oblique rows in fore-wing larger, and usually ringed with bluish (sometimes also with a few ochreous-yellow) scales;* in both wings traces of a double row of bluish-white lunules along hind-margin. UNDER SIDE.—As in ♂.

Specimens of both sexes occur in which the yellow patch of the hind-wing is much restricted, not rising above subcostal nervure or extending far below or beyond median nervure. With one exception —a ♀—the five examples (3 ♂s, 2 ♀s) I have examined presenting this variation are unusually small.

VAR. A (♂ and ♀).

Exp. al., (♂) 3 in.; (♀) 3 in. 6 lin.

Fore-wing: two spots of median oblique row much enlarged (especially that in discoidal cell), almost touching. *Hind-wing: basal patch iridescent-white*, only slightly tinged with ochreous-yellow on its edge. UNDER SIDE.—In ♂ with a slightly rufous tinge in the brown portions.

Hab.—♂, Natal (? local.); ♀, D'Urban (*J. H. Bowker*).

This *Euralia* is the Southern representative of *E. dubia* (Palis. de Beauv.) of Western Africa. It differs with apparent constancy in the following particulars, viz., in the *fore-wing*: (1) the two spots of the median oblique row are much smaller and far apart; (2) the subapical oblique white band is narrower, and divided into three quite distinctly separate spots; (3) the white spots of the submarginal row are smaller; (4) the ochreous scaling or suffusion on the inner margin is altogether wanting; and (5) the white spot near base, in discoidal cell, is obsolete; while in the *hind-wing* (6) the basal patch is broader and uniformly yellow-ochreous. The under side differs correspondingly, and (7) the white spots at the bases of the wings are smaller.

The small Variety A. above characterised decidedly inclines in the direction of *E. dubia*, as far as the enlarged median spots of the fore-wing and the white patch of the hind-wing are concerned, but in other respects retains the distinctive features of *E. mima*.[1]

A very fine ♀, taken at D'Urban by Colonel Bowker in March 1879, is remarkable for possessing a gloss of indigo-blue over the black ground in the apical half of the fore-wings, and also for having all the spots in those wings very distinctly ringed with bluish on the upper as well as on the under side.

E. mima was very rare on the coast of Natal in the summer of 1867, and I only met with two specimens—one at D'Urban and the other near Verulam, both during February. On each occasion I at first mistook the butterfly for *Amauris Echeria*, until I noticed its more active flight. The late Mr. M. J. M'Ken and Colonel Bowker, during their long residence in the Colony, often took specimens, and about twenty examples have been received from them. Among the latter gentleman's captures was a pair taken *in copulâ* in the Park, D'Urban, on the 11th February 1881. These individuals were unusually small—the ♂ expanding only 2 in. 11 lin., and the ♀ 3 in. 4 lin.—and much alike, both presenting the variation above mentioned, viz., the much-reduced yellow patch of the hind-wing, and having also the spots of the fore-wing smaller and less distinct than usual, especially in the ♂. This close resemblance of the paired sexes is of interest, seeing that (as noted under *E. Wahlbergi*) the ♂ *Mima* has on one occasion been taken *in copulâ* with the ♀ *Wahlbergi*.

Localities of *Euralia mima*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban. Little Umhlanga (*H. C. Harford*). Verulam.

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[1] This small variety appears to approach very closely *E.* ("*Panopea*") *Drucei*, Butler, from Madagascar (to judge from the description and figure in *Trans. Ent. Soc. Lond.*, 1874, p. 426, pl. vi. f. 3), differing chiefly in the less regular macular bars of the fore-wing, and in the smaller and less ochre-tinged patch of the hind-wing.

93. (3.) **Euralia deceptor,** (Trimen).

Plate VI., fig. 3 (♀).

♂ *Diadema deceptor*, Trim., Trans. Ent. Soc. Lond., 1873, p. 105.

Exp. al., (♂) 3 in. $3\frac{1}{4}$ lin.; (♀) 3 in. 1 lin.

♂ *Black, with white (very slightly pink-glossed) markings. Fore-wing:* costa dusted with pale-bluish scales near base; a small rounded spot in discoidal cell near base; an irregular oblique central bar, consisting of a narrow cellular stripe and a large ovate patch, lying mainly between second and first median nervules (but extending slightly above the former and considerably below the latter nervule); a narrow subapical stripe of three spots, extending from a little below costa to third median nervule (the lowest spot largest); a small spot near apex, and a similar one near anal angle, just above submedian nervure. *Hind-wing:* in basal region a large, sub-rotundate patch, not reaching base, and scarcely extending above subcostal nervure, but spreading indistinctly to inner margin, and projecting outwardly between radial and third median nervules; outer edge of patch indented by black between nervules; a submarginal row of four minute whitish spots, between first subcostal and second median nervules,—that nearest costa less indistinct than the rest; beyond them, but towards anal angle, very faint traces of a hind-marginal, lunulate, whitish streak. Under side.—*Hind-wing, and costal and apical border of fore-wing, pale, glossy, greyish-brown. Fore-wing:* violaceous-pink lustre over white markings more observable than on upper side; three additional white spots at base; subapical stripe commencing on costa with a broad white mark; brown border commencing at base, extending widely along costa, so as to cover upper portion of discoidal cell (irrorated with whitish scaling on each side of costal nervure), and occupying apical region to below extremity of third median nervule; some faint whitish irroration on costa near apex just above white spot; and some (rather stronger) at lower extremity of subapical stripe; a double row of hind-marginal white lunules; a blue tinge over the black ground-colour, especially on the edges of the large central marking, of the anal-angular spot, and of a minute spot above latter. *Hind-wing:* basal lobe dull-white; this dull-white extends beyond precostal nervure; an orange dot and a white dot at origin of costal and median nervules white patch duller than on upper side, larger and more irregular in outline, widening so as to occupy inner margin to its edge as far as in a line with end of abdomen, and emitting a conspicuous ray upward to apex from between the subcostal nervules; from outer angle of patch there extends some dense whitish irroration, on each side of third median nervule, as far as hind-marginal lunules; five distinct dots in submarginal row; two rows of hind-marginal lunules, thin, distinct, almost continuous throughout.

Palpi and legs of the same greyish-brown as the under side of hind-wings and of great part of the fore-wings.

♀ *All white markings larger. Fore-wing:* central bar touches small spot near base, reaching inwardly to origin of first median nervule, and outwardly to a little beyond lower part of extremity of discoidal cell. *Hind-wing:* white patch very much larger, extending so far beyond middle as to leave only a moderately broad hind-marginal border of black (of almost even width throughout). Edges of larger markings (especially of central bar of fore-wing) glossed with violaceous-blue as in *E. Anthedon.* UNDER SIDE.—As in ♂, but white markings much enlarged, especially in hind-wing, which is all white except for a costal and a hind-marginal border of brown.

This *Euralia* presents an unmistakable mimicry of *Amauris Ochlea* (Boisd.), a local species inhabiting the coast of Natal and St. Lucia Bay. All the white markings in the *Euralia* are in proportion smaller than in the *Amauris*, and the central bar of the fore-wings is more obliquely placed; while on the under side the grey colouring is paler and the hind-wings want the narrower basal black of *Ochlea*, and present a pale ray (from the central patch to the apex) which is not found in the latter.

E. Deceptor is intermediate in character between *E. mima* and *E. Wahlbergi*, but is on the whole perhaps nearer to the former, both in size and markings; though the absence of any ochreous tinge in the white bars and the pinkish gloss of those markings, added to the width of the central bar of the fore-wings, approximate the insect to the latter. The white spots of the head, palpi, and back of thorax are identical in the three species, and a tuft of ochreous hairs on the posterior region of the breast is also found in all of them.

The first example (a ♂) of this interesting *Diadema* known to me was taken by Mr. W. Morant in a road cut through thick bush, in Victoria County, Natal, about the middle of July. In reply to an inquiry from me, that gentleman states that the place of capture was one in which he had sometimes found *Danais Ochlea.*

The only other specimen I have seen was captured by Colonel Bowker at Clairmont, near D'Urban, on 2d February 1880. This is the ♀ figured on Plate VI. Colonel Bowker wrote at the time that it was quite a chance capture, having been started by his walking among some low branches and leaves by the side of a bush-road.[1]

Localities of *Euralia deceptor.*

I. South Africa.
  E. Natal.
    a. Coast Districts. — D'Urban (*J. H. Bowker*). Victoria County (*W. Morant*).
  H. Delagoa Bay.—Lorenço Marques (*Mrs. Monteiro*).

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[1] Since the above was written, I have seen a second ♂, from the collection of Mr. H. Grose Smith, taken at Delagoa Bay by Mrs. Monteiro. This individual differs slightly on the upper side from Mr. Morant's example, having the central bar of the fore-wing narrower in its lower and larger portion, not rising at all above second median nervule, and extending only a very little below first median nervule.

GENUS PSEUDACRÆA.

Pseudacræa, ("Section A. Sub-Section b, Division **," of *Diadema*) and *Panopea* ("Do. do., Divn. * of Do."), Westw., Gen. Diurn. Lep., ii. p. 281 (1850).
Panopea, Trim., Trans. Ent. Soc. Lond., 1868, p. 79.

IMAGO.—Allied to *Diadema*, Boisd., and *Euphædra*, Hübn. *Head* of moderate size, downy above, hairy in front; *palpi* elongate, convergent, densely scaly, ascendant to about level of forehead,—second joint long, tufted above and along inner edge, and sometimes thinly hairy beneath,—terminal joint short and blunt; *antennæ* long or very long, rather thick, with the club very elongate and very gradually formed.

Thorax long and thick, densely downy beneath, more thinly so above, and moderately hairy posteriorly. *Fore-wings* elongate, more or less produced apically, much as in *Diadema;* first subcostal nervule originating much more towards base, and second considerably more before extremity of discoidal cell than in *Diadema*, and third one originating not so far beyond cell; lower disco-cellular nervule stronger, more arched. *Hind-wings* with costa, after basal convexity, very slightly arched; hind-margin more or less sinuated; anal angle sometimes decidedly prominent in ♂; neuration as in *Diadema;* discoidal cell rather shorter (in *P. Semire* (Cram.) exceedingly short); lower disco-cellular nervule quite distinct, more or less curved, usually joining median nervure where second and third nervules originate; groove formed by inner margins not so deep or complete as in *Diadema.*

Abdomen very compressed laterally; much longer than in *Diadema* or *Euralia.*

With the exception of the green-spotted *Semire*, Cram., and *Imerina*, Hewits. (= *Glaucina*, Guér.), and the rufous-and-black *Hostilia*, Drury —which have the hind-wings much produced in their inferior half, and constitute a section apart—all the species of this Ethiopian genus are in both sexes distinctly imitative of various species of *Acræinæ*, the ♀ of two only (*P. Tarquinia* and *P. Delagoæ*, Trim.) showing more resemblance to two species of *Amauris*, of the sub-family *Danainæ.* It would be difficult to imagine more perfect mimicries than several of these—*e.g.*, that of *Planema Gea* (Fab.), ♂ and ♀, by *Pseudacræa Hirce* (Dru.), ♂ and ♀; of *Pl. Aganice* (Hewits.), ♂ and ♀, by *Ps. imitator*, Trim., ♂ and ♀; or of *P. elongata*, Butl., ♀, by *Ps. metaplanema*, Butl., ♀—extending as they do not merely to colouring and pattern, but to outline of wings and such minutiæ as the colour of the palpi and the spotting of the thorax and abdomen. Almost as perfect also are the imitations of *Acræa Zetes* (Linn.), ♂ and ♀, by *Ps. Boisduvalii*, Doubl., ♂ and ♀, and of *A. Acara*, Hewits., ♂ and ♀, by *Ps. Trimenii*, Butl., ♂ and ♀. The exactness of these and of some other mimicries among African butterflies can best be estimated by the fact that they have deceived not only practised collectors, but experienced entomologists, so that it was by no means uncommon until recently to find even in public collections specimens of the models and of their copies placed together, in the mistaken belief that they were representatives of one and the same species. There is thus no difficulty in understanding how complete is the deception in the field, where the habits and flight of the mimicking insects are more or less assimilated to those of the protected species mimicked, which inhabit the same districts, and very often haunt the same spots.

Of the four known South-African species, *Ps. Trimenii* and *Ps. imitator* respectively imitate the red black-spotted *Acræa Acara* and the black yellowish- or white-banded *Planema Aganice*,—the latter affording an instance of remarkably exact imitation. The males of the remaining two, *Ps. Tarquinia* and *Ps. Delagoæ*, present a much less close resemblance to the same *Planema;* while their females, singularly enough, are modified in distinct relation, respectively, to the Danaine *Amauris Echeria* and *A. Ochlea.* In range, *Tarquinia* seems farthest distributed, occurring at Natal, on the Zambesi, and in Usambara; *Trimenii* inhabits Natal, Delagoa Bay, and Zambesia; *Imitator* has been found only in Natal; and *Delagoæ* inhabits the place after which it is named. All appear to be rather scarce insects, but it is not unlikely that they are less rare than they seem,—their disguise rendering them very apt to be passed over among the abundant *Acræinæ.*

94. (1.) **Pseudacræa Tarquinia**, (Trimen).

♂ *Panopea Tarquinia*, Trim., Trans. Ent. Soc. Lond., 1868, p. 79, pl. v. f. 3.

Exp. al., 2 in. 4½ lin.—3 in.

♂ *Brownish-black, with white and yellowish-white bands. Fore-wing:* an outwardly arched band of four white spots, of which the first (much smaller than the others) is in discoidal cell close to its extremity, and the fourth (the largest) between first and second median nervules; two elongate yellowish-white spots, one on each side of submedian nervure, forming an irregular patch on inner margin rather beyond middle (of these the upper spot is sometimes very much reduced or almost obsolete); between white band and apex two obliquely-lying subquadrate white spots, one on each side of first discoidal nervule; a fine linear edging of pure-white along costa from a little beyond middle, ending at apex in a conspicuous white spot extending to the cilia immediately adjoining. *Hind-wing:* crossing middle, a broad yellowish-white band, beginning close to costa, opposite inner-marginal patch of fore-wing; of this band, the inner edge, not far from base, is slightly irregular,—the outer edge regularly and sharply dentated by inter-nervular black rays extending from hind-margin. In *both wings,* but especially in fore-wing, indistinct traces of a submarginal row of small dull-whitish spots; *cilia* with minute inter-nervular white spots. UNDER SIDE.—*Ground-colour pale ochreous-brown*, except discal area of fore-wing, which is brownish-black. *Fore-wing:* a small white spot at origin of subcostal and median nervures; a fulvous-ochreous streak along costa for a little distance from base; a longitudinal black ray in discoidal cell, at extremity joining the discal black; white band and spots larger than on upper side, especially spot at apex, which is widely suffused inwardly; sometimes a third spot, narrower and usually much smaller than the other two, at lower end of subapical bar; four or five small white spots in a submarginal row between third median nervule and anal angle. *Hind-wing:* base, as far as inner edge of central band, dull fulvous-ochreous, marked with eight black spots, viz., one on costa at base, one on each side of precostal nervure, three in discoidal cell, and one on each side of first subcostal nervule; four of these are on the edge of central band, which is broader than on upper side; a more or less complete submarginal row of small white spots arranged in pairs between nervules (wanting in one example); inter-nervular rays more conspicuous than on upper side.

Head and thorax black; head with a large white spot in front and four small ones on summit,—the palpi black above, with white black-edged sides; thorax with four small white spots on each side above, and seven large ones on each side beneath. Abdomen black above, with a row of five small white spots on each side; creamy beneath.

♀ *Ground-colour browner than in* ♂; all the markings of *fore-wing* smaller, more yellowish, and more or less obscured by some greyish scaling; band of *hind-wing* pale ochreous-yellow; submarginal row of small whitish spots much better marked *in both wings*, but especially in hind-wing. *Fore-wing:* apical white spot wanting, but adjacent cilia white as in ♂. UNDER SIDE.—Ochreous-brown duller than in ♂. *Fore-wing:* bands yellower, narrower, more distinctly macular; basal fulvous-ochreous streak and apical white spot wanting. *Hind-wing:* basal colouring duller, browner.

Apical portions of fore-wings much more elongated in the ♀.

This species is closely allied to *P. Lucretia* (Cram.), but, as far as the male sex is concerned (I have not seen the ♀ *Lucretia*), presents the following differences, viz.: In *fore-wing* (1) the two spots of subapical bar are more or less quadrate, and do not radiate towards hind-margin; (2) the inner-marginal patch is yellower and much smaller; (3) the white costal edging and apical spot are characters wanting in *Lucretia;* while in *hind-wing* (4) the band is yellowish and much broader. On the under side, in *fore-wing* (5) the whitish scaling in discoidal cell and the conspicuous white radiation from subapical bar are both wanting; (6) the median band is wider; (7) the submarginal spots are smaller and fewer; while in *hind-wing* (8) the basal ochreous is broader; (9) the submarginal spots are smaller; and (10) the inter-nervular streaks fainter. The abdominal white spots are smaller than in *Lucretia.*

The ♂ *P. Tarquinia* is apparently imitative of *Planema Aganice* (Hewits.),[1] the shape and position of the central bands, the colouring, and particularly the basal markings of the under side of the hind-wings, being remarkably similar; but the *Pseudacræa* has a short subapical white bar not found in the *Planema.* The latter marking is, however, not noticeable in flight, and I fully believed the first example that I met with to be *Planema Aganice,*—a butterfly frequenting the same spot. Curiously enough, the ♀ *Tarquinia* does not resemble either sex of *Pl. Aganice,* but is plainly modified in imitation of *Amauris Echeria* (Stoll), as shown by the reduced spots and (especially) apical prolongation of the fore-wings, the ochreous-yellow band of the hind-wings, the more distinct series of small submarginal spots, and the browner colouring of the under side. I have not seen the ♀ *Tarquinia* in life, but the likeness to *Echeria* in the cabinet is so strong, that on the wing it is in all probability entirely deceptive.

I met with two examples only in Natal, one near D'Urban, on 18th February 1867, and the other near Verulam, on the 24th of the same month; the former was settling on a shady pathway in a wood, and the latter hovering about young trees at the edge of a wood, and settling on the outermost twigs occasionally. This latter individual had precisely the same slow floating flight as *Planema Aganice,* and settled in exactly the attitude adopted by that butterfly and by *Amauris Echeria,* viz., with the wings dependent and closely shut, at the very extremity of a twig.

The butterfly is undoubtedly rare; but the late Mr. M. J. M'Ken forwarded a male from D'Urban in 1869 and a female in 1871. A female from Natal was in Mr. Hewitson's collection in 1867, as well as a male from the Zambesi. During his stay in Natal, Colonel Bowker has sent me four males from D'Urban (April 1879 and June 1881), one male from Isipingo (April 1879), and two males and one very small female (*exp. al.,* 2 in. 4½ lin. only) from Pinetown.

In Mr. Distant's collection I noted an apparent ♂ from Magila, East Africa, in which the bands were tinged with reddish-ochreous. The Natalian ♂ s vary in the more or less yellowish tint of the band of the hind-wings.

Localities of *Pseudacræa Tarquinia.*

- I. South Africa.
    - E. Natal.
        - *a.* Coast Districts.—D'Urban. Verulam. Pinetown and Isipingo (*J. H. Bowker*).
- II. Other African Regions.
    - A. South Tropical.
        - *a.* Eastern Coast.—Zambesi.—Coll. Hewitson. Usambara: Magila. —Coll. Distant.

95. (2.) **Pseudacræa Delagoæ,** Trimen.

Exp. al., (♂) 2 in. 6½ lin.; (♀) 2 in. 11 lin.

♂ *Black, with white bands and spots. Fore-wing:* an outwardly arched rather broad band of five white spots, of which the first is of about the same size as the second, and is in discoidal cell at its extremity (being separated from the second by the curved and strongly black-clouded lower disco-cellular nervule),—the fourth is the largest,—and the fifth (immediately below first median nervule) very small; two elongate white spots, one on each side of submedian nervure, forming a distinct, rather small, superiorly-rounded patch on inner margin rather beyond middle; between arched white band and apex two obliquely-lying white spots, of which the lower is outwardly rather deeply bifid; below the lower of these two spots, the indistinct trace of a linear white mark, succeeded by a very faint series of almost obsolete minute whitish spots, between nervules, close to hind-margin; a very fine linear white edging along costa from a little beyond middle to apex, where it terminates in a conspicuous white spot extending to the cilia immediately adjoining, and somewhat suffused on its inner side. *Hind-wing:* a very broad central white band from costa to inner margin; of this band, the inner edge near base is slightly dentated, the outer edge regularly and deeply pierced by inter-nervular black rays extending from hind-margin; the ray between submedian and internal nervures much longer than the rest, reaching almost to base; close to hind-margin, a row of very indistinct whitish minute spots arranged in pairs on both sides of each inter-nervular ray; at anal angle two or three indistinct ochrey-yellow marginal marks. *Cilia* with minute inter-nervular white spots. UNDER SIDE.—*Very pale ochreous-brown, mixed with whitish in apical hind-marginal area of both wings;* discal area of fore-wing tinged with fuscous. *Fore-wing:* a small white spot at origin of subcostal and median nervures; a pale fulvous-ochreous streak along costa from base to a little before middle; a longitudinal black ray in discoidal cell surmounted by a shorter divergent white ray; white markings larger than on upper side, especially first spot of central band and both sub-apical spots,—the latter forming a continuous bar inferiorly confused with the whitish inter-nervular clouding of apical hind-marginal area; crossing this area, conspicuous inter-nervular fuscous rays; apical white spot enlarged and inwardly merged into whitish clouding; submarginal white spots distinct from third median nervule to anal angle. *Hind-wing:* base, as far as inner edge of central band, pale fulvous-ochreous marked with eight black spots as in *P. Tarquinia;* central band broader than on upper side; submarginal white spots much larger than on upper side, and quite distinct except near apex, where they are confused with the inter-nervular whitish clouding; hind-margin and anal angle bordered with ochrey-yellow.

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[1] The West-African *Lucretia,* with its much more conspicuous subapical white marking in the fore-wings, bears a strong likeness to *Planema Lycoa* (Godt.), a native of the same region.

♀ *All the white markings (except apical spot) considerably larger, especially the central band in both wings. Fore-wing:* central band very much broader than in ♂, more even and continuous, its first spot so enlarged as to occupy outer half of discoidal cell; lower disco-cellular nervule only thinly marked on the white; costal white edging line wanting, and apical white spot very thin and minute; submarginal spots distinct,—the two next succeeding subapical spots elongated, sub-linear. *Hind-wing:* central band begins rather nearer to base and extends rather nearer to hind-margin; submarginal spots distinct in pairs throughout; hind-marginal ochrey-yellow marks developed into an edging from radial nervule to inner margin a little before anal angle. UNDER SIDE.—*White markings as above, but with a distinctly greenish gloss, in parts tinged with violaceous;* whitish clouding almost obsolete in apical area of fore-wing, and quite wanting in that of hind-wing. *Fore-wing:* discal area much darker than in ♂. *Hind-wing:* hind-margin distinctly edged with ochrey-yellow throughout, and anal angle suffused with that colour.

This butterfly is a very near ally of *P. Tarquinia*, Trim.; and when I had only seen a ♂ example in Mrs. Monteiro's collection in the year 1881, I did not think that it should be treated as more than a variety of the species named. But having now (August 1884) received both sexes on loan from Mr. H. Grose Smith, I find that the ♀ presents features so very dissimilar as to demand specific separation. As regards the ♂, *P. Delagoæ* is distinguishable by (1) the greater development and purer white of the central markings, (2) the better definition of the small submarginal spots, (3) the presence of ochrey-yellow marks at the anal angle of the hind-wing, and on the *under side* by (4) the mixture of whitish clouding in apical hind-marginal area of both wings, (5) the paler fulvous ochreous at base of hind-wing, and (6) the ochre-yellow hind-marginal and anal angular border. In the ♀ all these differences (except the whitish clouding on the under side) are emphasised; and the contrast between her and the narrowly yellow-banded ♀ *Tarquinia* is too great to need minute description. In fact, while the ♀ *Tarquinia*, as above pointed out, is in outline, pattern, and colouring modified in resemblance to *Amauris Echeria*, the ♀ *Delagoæ* is decidedly imitative of *A. Ochlea*. The abdominal white spots, which are indistinct in ♀ *Tarquinia*, are conspicuous in ♀ *Delagoæ*.

The ♂ and ♀ here described and the ♂ above referred to are all the examples I have seen, and all three were taken at Delagoa Bay by Mrs. Monteiro.

It is curious that the ♂ *Delagoæ*, though in some characters farther removed from the West-African *Lucretia*, Cram., than is *Tarquinia*, shares with the former only the conspicuous feature of whitish clouding on the under side near the apex of both wings.

Locality of *Pseudacræa Delagoæ*.

I. South Africa.
  H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).

96. (3.) **Pseudacræa imitator**, Trimen.

PLATE VI. fig. 1 (♀).

Pseudacræa imitator, Trim., Trans. Ent. Soc. Lond., 1873, p. 107.

Exp. al., 2 in. 11½ lin.—3 in. 2½ lin. (♀).

♀ *Fuscous, with yellowish-white bands. Fore-wing:* an oblique, narrow, subapical band, tolerably even and continuous, slightly broader inferiorly, crossed by three nervules, extending from a little below costa as far as second median nervule; on inner margin, beyond middle, a small space inconspicuously irrorated with yellowish-white; five black spots in discoidal cell, the largest one at base, and enclosing a small white spot; two rather smaller, nearer to base than to extremity of cell, placed very obliquely, so that the lower is wholly beyond the upper; and two, smaller than the two central ones, still more obliquely placed at outer end of cell, the lower being on second discocellular nervule; two small black spots just below cell, one at base, immediately preceded by a white dot, the other about as far from base as second cellular spot; a bluish-bronzy gloss along costa and over basal and inner-marginal region, strongest on inner-marginal edge. *Hind-wing:* a rather broad, central, transverse band, rather straight, and of even width except near costa, where it is rather narrowed and obscured; a good-sized black spot at base, marked (on origin of median nervure) with a whitish dot, and surmounted towards costa by a whitish spot; two black spots obliquely placed in discoidal cell near base; two above cell, one on each side of first subcostal nervule; one immediately below cell, close to base; one (small and thin) on the almost atrophied nervule closing cell; and one (minute) just outside cell above the radial nervule; the two spots last mentioned are within the white transverse band. *In both wings* inter-nervular black rays extend from hind-marginal edge to exterior of white band, in *hind-wing* piercing the band to some depth. UNDER SIDE.—*Much paler; outer halves of wings ochreous-grey;* spots near base as on upper side, but much more conspicuous; pale bands with less distinct outline, that of hind-wing narrower; in each wing an additional white spot at origin of costa. *Fore-wing:* inner-marginal whitish space more apparent, but still ill-defined; a faint basal tinge of fulvous below cell. *Hind-wing:* all the basal ground-colour before transverse band *ferruginous-fulvous*, with a faint violaceous gloss.

Antennæ black; *palpi* black above, laterally and beneath yellow; *head, thorax,* and base, broad dorsal line, and segmental incisions of *abdomen* black. *Head* with six white spots (two on front, two on summit, and two behind the eyes); *collar* with two; *thorax* with eight; base of *abdomen* with two; *breast* with one central white spot, and two yellowish spots on each side; *legs* brown, with a white spot at base of each femur, except first aborted pair, which are yellowish. *Abdomen* with sides and under-surface ochre-yellow.

The species is nearly allied to *P. Hirce*, Drury. (See Mr. Hewitson's figure of the typical form of the ♀ *Hirce* (*Eurytus*, Clerck), from Calabar.[1]) It may, however, be readily distinguished from the latter by the absence in the *fore-wings* of the conspicuous white band which in the ♀ *Hirce* extends from the inner margin towards the subapical band; and by the fuscous base of the *hind-wings*, which in the ♀ *Hirce* is occupied by the white of the band. In *P. imitator* the subapical band of the fore-wings is much longer and narrower, and the second and third cellular spots are in all the wings nearer to the base.

The above description was made from the only two specimens (both ♀) then known to me. I have since received from Colonel Bowker the following Natalian examples, viz., a ♀ in 1878, whose locality was not recorded, it having been mistaken for *Planema Aganice*, Hewits.; and two ♂s and three ♀s from Pinetown in 1883. The ♀s quite agree with the foregoing description, except that in the finest and freshest of them the bands of both wings are pure white. The two ♂s are considerably smaller than the ♀s, the expanse of wings being respectively 2 in. 6½ lin. and 2 in. 8 lin. In pattern they do not differ from the ♀, except in the narrower oblique band of fore-wing beyond middle. The fresher of the two has, however, *the bands of both wings of a decidedly pale ochrey-yellowish throughout*, while the other has only a tinge of that colour at the superior extremity of the band of hind-wing. On the under side the sexes present no difference.

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[1] *Exot. Butt.*, iv. Diadema, iii. f. 11 (Part 66, April 1868).

The ♂ *P. imitator* is very unlike the ♂ *P. Hirce*, which has rufous bands (including a large patch or short band on inner margin), in imitation of the ♂ *Planema Gea* (Fab.) of Western Africa.

From *P. Tarquinia* (Trim.), which inhabits the same districts, *P. imitator* may at once be distinguished by possessing—(1) only one oblique even bar in the fore-wing, instead of two submacular ones, and (2) the black spots in the basal area of both wings. The apical area is very much blunter in outline, especially in the ♀. The palpi are ochre-yellow laterally and beneath, instead of white with a black edging; and the sides of the abdomen are of the same yellow, without any white spots.

Captain H. C. Harford, of H.M. 99th Regiment, took a single specimen, on the 21st January 1868, in a narrow bush-path near the Little Umhlanga, and describes it as settled on the ground with the wings expanded, sucking moisture from the damp sand. Another example was captured by Mr. Walter Morant, on the 8th June 1869, near Pinetown: it is noted by him as flying near the ground on a hillside in the vicinity of thick bush. Mr. Harford observes that these two individuals were the only ones ever seen by him.

P. imitator is a close mimicker of *Planema Aganice* (Hewitson), the ♀ differing principally in the fore-wings in the minor features of possessing some black spots near the base and a slight inner-marginal whitish suffusion, and of wanting a separate white or yellow spot at the extremity of the subapical bar. The spots at the base of the hind-wings are not so numerous as in the *Acræa;* and the palpi are yellow, instead of black spotted with white. The spotting of the head, thorax, and base of abdomen is almost identical in the two insects; and in both the abdomen is ochreous on the under side, while the ochreous abdominal spots and rings of *Aganice* are roughly represented by the general ochreous lateral colouring in the *Pseudacræa*.

Colonel Bowker, when forwarding ♂ and ♀ in very fine condition from Pinetown in April 1883, wrote: "It is quite impossible to distinguish the difference between this butterfly and *Aganice*, either when settled or on the wing; and the first notice you get is the brittle *crunch* between finger and thumb of *Imitator*, or the soft leathery feel of *Aganice*. Death is, moreover, instantaneous with the former, while you may squeeze *Aganice* as long and as hard as you like without effect; nothing but the poison-bottle will settle him!" This very exact mimicry leads to the conjecture that possibly *P. imitator* may not actually be so rare as it would appear; for undoubtedly the ordinary collector would overlook it among specimens of its model, *Aganice*. At present (April 1884) the eight specimens above mentioned are the only ones known to me as having been met with. Colonel Bowker's examples were taken on 31st March (one), in April (two), and in June (two).

Localities of *Pseudacræa imitator*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—Little Umhlanga (*H. C. Harford*). Pinetown (*W. Morant* and *J. H. Bowker*).

97. (4.) Pseudacræa Trimenii, Butler.

♂ ♀ *Panopea Boisduvalii*, Trim. [part], Trans. Linn. Soc. Lond., xxvi. pp. 517–518, t. 43, ff. 8, 9 (1869).
♂ *Pseudacræa Trimenii*, Butl., Ent. M. Mag., xi. p. 57 (1874).
Var. ♂, Trim., *loc. cit.*, pp. 517–518 = *Pseudacræa Colvillei*, Butl., Ann. and Mag. Nat. Hist., 5th Ser., xiv. p. 123 (1884).

Exp. al., (♂) 3 in. 3–5 lin.; (♀) 3 in. 8–11 lin.

♀ *Deep-red (more vivid and carmine-tinged in hind-wing), spotted and bordered with black; apical half of fore-wing semi-transparent fuscous, crossed by an oblique yellow-ochreous bar. Fore-wing:* costa from base very narrowly, apex broadly, and hind-margin rather narrowly, bordered with black; on inner margin for a little distance from base a narrow black or fuscous streak, prolonged thence as a mere linear edging as far as posterior angle; red ground-colour not reaching upper corner of extremity of discoidal cell, nor rising above second median nervule, but extending to hind-marginal border; in discoidal cell, five rather large rounded black spots, viz., one near base, two obliquely placed about middle, and two (the lower situated on lower disco-cellular nervule) at extremity; below median nervure, six similar spots, viz., one at base, two (one above and a little beyond the other) near base, and three (in a transverse row) situated respectively on second median nervule at its origin, on first median nervule, and on submedian nervure; all these spots are very thinly ringed with semi-transparent fuscous-grey scales; neuration everywhere black; semi-transparency of apical half of wing most pronounced on its inner portion; oblique yellow-ochreous bar variable in width, sometimes rather narrowed superiorly, extending from costal to hind-marginal black border; from hind-margin a series of seven strongly-marked inter-nervular black rays (changed to fulvous where they cross the ochreous bar), much thickened inwardly, especially the three lower ones. *Hind-wing:* at base, four or five black spots unite to form a large marking above and partly entering discoidal cell; the black at base of cell is marked with a white or whitish spot; in cell near extremity a good-sized rounded black spot, and a similar spot on the disco-cellular nervule; another black spot just below median nervure, and a row of three small ones on the median nervules at or near their origins; a moderately-broad hind-marginal black border containing seven fulvous-ochreous spots between nervules; the inner edge of this border radiates slightly on the nervules, and in some specimens also emits short inter-nervular rays; about median nervure and its branches and submedian nervure some more or less distinct clouding of whitish scales. *Cilia* extremely narrow, black, in hind-wing with very minute inter-nervular white spots. UNDER SIDE.—Very like upper side, but deep-red replaced by *rose-pink tinged with carmine. Fore-wing:* borders fuscous-grey instead of black; yellow-ochreous bar paler; black spots as on upper side; inter-nervular rays almost obsolete except at their inner ends. *Hind-wing:* whitish discal clouding much more developed; neuration generally black finely edged with whitish scales; basal black broken up into one large mark at base enclosing three white spots, three rather large rounded spots above discoidal cell, and a small round spot in upper part of cell; other black spots as on upper side; inner-marginal fold more or less clothed with creamy-yellow hairs; spots in hind-marginal border pale ochreous-creamy, in parts faintly tinged with pink (an eighth spot between submedian and internal nervures).

Head, thorax, and abdomen black, with the following white and yellow markings, viz.: *superiorly*, two small white spots on front, and two on back of *head;* two rather larger white spots on collar; two white spots on patagia of *thorax*, and four large ochreous-yellow ones (one pair about middle, the other posterior) behind them; on *abdomen* a pair of white spots on basal segment, and a pair of large ochreous-yellow ones on each other segment;—*inferiorly*, the *palpi* are ochreous-yellow with the terminal small joint black; *thorax* with a central ochreous-yellow stripe, and nine or ten good-sized white spots on each side; *abdomen* with the segmental incisions and a stripe on each side pure-white. Antennæ black. Legs black, with small white spots defining each joint.

♀ *Much duller, the red in fore-wing replaced by pale greyish-ochreous, and in hind-wing by pale rufous-ochreous;* the black spots in paler (some of them in whitish), more developed rings; other black markings duller and less pronounced, especially the inter-nervular black rays of the fore-wing. *Fore-wing:* yellow-ochreous subapical bar paler and broader (its lower extremity in one example indistinctly separable from the discal colouring); immediately preceding its upper part an ill-defined, short, blackish oblique ray. UNDER SIDE.—*Very much paler and duller*, with only a faint reddish tinge over bases and on discs. *Hind-wing:* whitish-creamy, tinged with pale-yellow on the margins; spots in hind-marginal border the same colour, partly tinged with reddish; before hind-marginal border some faint inter-nervular reddish rays.

Head, thorax, abdomen, &c., coloured and marked as in ♂.

VAR. A.—♂ and ♀.

♂ *The subapical yellow-ochreous bar of fore-wing wholly wanting*, so that the whole apical half is left semi-transparent fuscous-grey. The spots in hind-marginal border much larger than usual. (Two examples.)

♀ *An oblique, narrow, white subapical ray in fore-wing*, obsolete superiorly, inferiorly tinged with yellow-ochreous; ground-colour brighter and redder, especially in hind-wing near base; spots in hind-marginal border not much larger than in ordinary ♀. On under side the basal and discal rose-pink is much developed, and only a little paler than in the ♂. (One example; *exp. al.*, 4 in.)

P. Trimenii is the Southern representative of *P. Boisduvalii*, Doubl., from West Africa. The black spots are in size, number, and arrangement the same in both forms, but the hind-marginal border of the hind-wing is broader and the spots it contains are smaller in *Trimenii*. It is in the colouring, however, that a striking difference exists, *Boisduvalii* having in the fore-wing only a basal and inner-marginal reddish suffusion, and wanting altogether the conspicuous yellow-ochreous subapical bar,—the ♀, however, having in its place a faint white mark, while the red of the hind-wing is duller and paler without a carmine tinge. The variety of *Trimenii* above described approximates to the West-African form in wanting the yellow bar of the fore-wing, and in having the spots of the hind-marginal border of the hind-wing larger; but in other respects, and especially in the deep red ground-colour of both wings, is quite like the Southern form.[1]

This extremely handsome butterfly was first brought to my notice in a collection sent from Natal by the late Mr. M. J. M'Ken, who from time to time met with individual examples near D'Urban, and forwarded altogether five males (one of the Variety A.) and two females. During my visit to Natal in 1867, I specially watched for this species, but only saw one (a ♀) in the Botanic Garden, on the 25th March. This example was on the wing, and floated overhead in the full sunlight of mid-day—just out of reach of my net! Colonel Bowker wrote to me that during the first eighteen months of his stay at Natal, 1878–79, he saw but four "*Boisduvalii*," all of which he captured. Besides two of these D'Urban specimens, both ♂ s, he has forwarded a ♂ of the Variety A. from the Umkomazi (February 1883), a ♀ of the variety taken at D'Urban (on 7th April 1884), and a very fine and perfect ordinary ♂ from Pinetown (May 1883).

As pointed out in my paper on *Mimetic Analogies among African Butterflies* (*Trans. Linn. Soc. Lond.*, xxvi. p. 517), *P. Trimenii*—then regarded as a local variety of *P. Boisduvalii*—closely imitates *Acræa Acara*, Hewits., just as *Boisduvalii* itself is a mimicker of *A. Zetes* (Linn.) The mimicry is twofold, each sex of the *Pseudacræa* copying the corresponding sex of the *Acræa*, and is carried out on the under as well as on the upper surface of the wings, and also in such minutiæ as the yellow palpi and the spotting of the thorax and abdomen. Even the variable whitish suffusion on the disc of the hind-wings in *A. Zetes* is reproduced more or less distinctly in *P. Trimenii*.

A ♂ brought from the Zambesi by the Rev. H. Rowley, and presented to the Hope Museum at Oxford, did not differ from Natalian examples.

It is remarkable that the brilliant carmine-tinged red of this beautiful *Pseudacræa* soon fades in the cabinet to a dull brick-red, exactly as the similar bright reds of the *Acrææ* fade.

Localities of *Pseudacræa Trimenii*.

I. South Africa.

E. Natal.
a. Coast Districts.—D'Urban (*M. J. M'Ken* and *J. H. Bowker*). Pinetown and Umkomazi (*J. H. Bowker*).
H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).

II. Other African Regions.

A. South Tropical.
a. East Coast.—Zambesi (*Rev. H. Rowley*).

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[1] It has recently been described as a new species (*P. Colvillei*) by Mr. A. G. Butler, but it does not seem to me separable from *P. Trimenii*.

Genus GODARTIA.

Godartia, Lucas, "Ann. Soc. Ent. France, 1842, p. 299;" Westw., Gen. Diurn. Lep., ii. p. 282 (1850).

Imago.—*Head* of moderate size, shortly tufted in front; *eyes* smooth; *palpi* rather small, erect, divergent, roughly scaly; basal joint hairy beneath; middle joint tufted above as in *Diadema*, rather long and thick, terminal joint short and blunt; *antennæ* short and thick (especially in ♀), with the club elongated and but slightly hollowed inferiorly.

Thorax moderately thick, very convex superiorly, downy beneath and in front above, hairy posteriorly above; prothorax forming a well-marked neck. *Fore-wings:* broad, remarkably truncate in ♂—inner-margin being of unusual length; costa very strongly arched in ♂, moderately in ♀, finely serrated; apex squared in ♂, rounded in ♀; hind-margin rather convex about middle in ♂, concave in ♀; inner margin fringed with hair near base, slightly concave about middle; costal nervure very thick and rigid, especially near base; first sub-costal nervule short, slender, rising far before end of discoidal cell and united to costal nervure at about the same distance beyond cell; second and third also slender, but very long (the latter ending at apex), and arising respectively considerably before and a little beyond extremity of cell,—fourth and fifth thicker, branching off not very far beyond third; discoidal cell very short; disco-cellular nervules all very oblique,—upper one rather long, middle one very short (radial nervules thus originating close together), lower one very long, more slender than the others, slightly curved, joining third median nervule at same distance from its origin. *Hind-wings:* very broad—especially in ♂, where they are markedly prominent apically; costa very slightly arched after basal prominence; hind-margin slightly sinuated; inner-margins forming a wide rather shallow groove; nervures thick and rigid near base, especially the precostal; costal nervure terminating at apex; upper disco-cellular nervule forming curved base of long radial nervule, lower one wanting (leaving discoidal cell quite open); submedian and internal nervures much curved,—the latter short and unusually thick and rigid. *Fore-legs* of ♂ very small, but rather thick, densely scaly; tarsi with some short thick hairs at extremity; of the ♀ much longer, rather smoother,—tibia about as long as the femur, tarsus rather long, thickened at extremity, spinulose beneath. *Middle* and *hind legs* short, thick, scaly; tibiæ and tarsi bristly above, spinose beneath; tibial spurs very short.

Abdomen rather thick (in ♂ rather long), dorsally hairy at base and along median line.

This remarkable genus, though exhibiting relationship with *Diadema* and allied groups, more especially in the female, is emphatically characterised by its erect palpi, short antennæ, very exceptional neuration of the fore-wings, and extraordinary shape of the fore-wings in the ♂. The last-named feature gives a peculiarly clumsy, almost deformed look to the male, rendering it impossible to fail in recognising a *Godartia* of that sex; but the female in pattern and outline of wings usually much resembles a *Diadema* or *Euralia*. All the six species recorded are Ethiopian only, one being from Madagascar; and in all but one—*G. Trajanus*, Ward, from Camaroon in Western Africa, which has white markings tinged with yellow, and a chestnut-red basal patch in the fore-wings—the male has a peculiar colouring of shining-greenish ray-marks and spots on a black ground. This gives him somewhat of the appearance of a *Danais* of the *Limniace* section; but his shape is so very different, that the resemblance in life cannot be very close, especially as I learn from Mrs. Monteiro that his habits and flight are quite unlike those of the Danaine butterflies. Mr. Butler (*Lep. Exot.*, p. 53), in noticing the resemblance to a West-African *Danais* borne by *G. Eurinome* (Cram.), points out that the female of the latter is the more accurate mimicker; and in the case of the only species—*G. Wakefieldii*, Ward—inhabiting Southern Africa, it is noticeable that the male is less like a *Danais* than his near congeners, while the female clearly imitates a large black-and-white species of *Amauris*. All the *Godartiæ* have the head, palpi, prothorax, breast, and legs spotted with white, and their abdomen (except apparently in *G. Trajanus*) is ochreous-yellow.

G. Wakefieldii is a native of Eastern Africa, and its only known South-African station is Delagoa Bay.

98. (1.) **Godartia Wakefieldii**, Ward.

Godartia Wakefieldii, Ward, Ent. M. Mag., x. p. 152, pl. vi. f. 3 (1873).
♂ „ „ Oberth., Etudes d'Ent., liv. iii. p. 28, pl. ii. f. 5 (1878).

Exp. al., (♂) 3 in. 6 lin.

♂ *Black, with macular bands and spots of pale-green changing to white in certain lights. Fore-wing:* an oblique median macular band of nine distinct elongate spots, running from costa before middle to inner margin beyond middle; of this band, one large spot is in discoidal cell, and of the eight spots external to it, the second and eighth are much the smallest (almost linear), and the fifth and sixth the largest; a subapical slightly-oblique bar of three separate rather small subquadrate spots; a submarginal row of six very small rounded spots (of which the upper four are wanting in one example). *Hind-wing:* a sub-basal pale-green patch occupies discoidal cell and a space below and above it, but does not reach base or extend above first subcostal nervule or below submedian nervure; this patch is divided very unequally into six by the crossing black nervures, the cellular portion being very much the largest, and the portion at furcation of third and second median nervules very much the smallest; a discal row of eight conspicuous rounded spots, of which the first is largest, and the seventh and eighth (close together) are the smallest; close to hind-margin, a row of eight minute inter-nervular spots; just preceding them, in lower part of wing, a closer series of similar spots arranged in pairs between nervules. UNDER SIDE.—*Hind-wing, and costal, apical, and hind-marginal border of fore-wing warm ochreous-brown;* markings of upper side reproduced, but those of fore-wing greenish-white and those of hind-wing pure-white. *Fore-wing:* a very small white spot on costa at base; another, close to the first, at origin of median nervure; a rather larger one on costa near base; and a similar one in discoidal cell a little beyond the third. *Hind-wing:* three small white spots at and near base,—one at base marking common origin of nervures, another just above costal nervure, and another on precostal nervure; a fourth larger white spot on costa a little farther from base; sub-basal patch produced inferiorly to inner margin; a ninth small spot in discal row near inner margin; eight minute spots along hind-margin edged with fuscous; inner series of minute spots completed as far as costa.

Head, palpi, collar, breast, and legs black spotted with white; abdomen ochreous-yellow, fuscous superiorly at end near its base.

I have not seen the ♀[1] of this species, but, through the kindness of Mr. A. G. Butler, of the British Museum, possess a lithographic figure of it in the proof of a plate intended for a third part of Ward's *African Butterflies.* From this carefully drawn figure of the upper side, it is evident that the ♀ differs much from the ♂, wearing more the aspect of the genus *Euralia.* The fore-wings are lengthened and produced apically (*exp. al.*, 3 in. 8 lin.), and the median band is enlarged by the increased size and complete union of the cellular and the four larger divisions, while the subapical bar is similarly much enlarged; there are further a small spot superiorly just preceding subapical bar, and one in discoidal cell near base. The hind-wings have the patch very much enlarged outwardly, and extending very broadly quite to inner-marginal edge; the submarginal row of very small white spots in pairs complete, as on the under side of the ♂.

G. Wakefieldii, as far as the ♂ is concerned, seems more closely allied to the West-African type of the genus, *G. Eurinome*, Cramer, than to any other known *Godartia.* The ♂ is distinguished from that sex of *Eurinome* by its deeper-green markings, and by their greater development in the fore-wing, the component spots of both the median and subapical bands constituting a tolerably even and continuous bar, instead of being widely separated and irregularly placed. The ♀ *Wakefieldii* differs greatly from the ♀ *Eurinome* in the fore-wing, which is produced apically, instead of being of the ordinary form; and in which the enlarged markings are massed into a median and a subapical band, instead of being scattered and separated.

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[1] The South-African Museum has since acquired a ♀ example taken at Delagoa Bay by Mrs. Monteiro. On the upper side it nearly resembles the figure described in the text, but in the fore-wing has the median band (which is pure white) wider in the lower portion, and wants a small white spot in the discoidal cell near the base. On the under side the white markings are like those of the upper side, the basal white spots are similar to those in the ♂, and the brown of the margins is of a much duller, less ochreous, brown.

This very striking species, first known from East Africa between 3° and 4° S. of the Equator, was found at Delagoa Bay by the late Mr. J. J. Monteiro, but does not seem to extend farther southward. Mrs. Monteiro informs me that she has noticed several specimens of *Wakefieldii* sporting together and "tumbling over each other," at a height of about six feet from the ground. She found the insect wary, letting one approach pretty near, and then going straight towards the nearest cover with an irregular but not swift flight. It was attracted like the *Noctuæ* to "sugar." An example of the ♂ from Delagoa Bay was presented to the South-African Museum in 1882 by Mrs. Thompson, through the good offices of Colonel Bowker. It is almost exactly like Oberthür's figure, above cited, of a Zanzibar example, and has the central band of the fore-wings considerably narrower and more macular than in a figure of the typical ♂ which accompanies that of the ♀ in the plate for Ward's *African Butterflies*, above mentioned as communicated to me by Mr. Butler.

While the ♂ of this *Godartia*, like *G. Eurinome* and its near allies, but in a less degree, is imitative of the variety of *Danais Limniace* (Cram.), from Western Africa, named *Petiverana* by Doubleday (1847), and *Leonora* by Butler (1866), the ♀ most decidedly mimicks an *Amauris* of the *Niavius* form, being most like the Malagasy *A. Nossima*, Ward, but also very similar to *A. dominicanus*, Trim. The outline of wings in the ♂ (as in others of the genus) is not at all Danaine, but in the ♀ the apical production of the fore-wings makes it decidedly so, and quite approximates it in aspect to the species of *Euralia* which mimic the same group of *Amauris*.

Localities of *Godartia Wakefieldii*.

I. South Africa.
  H. Delagoa Bay.—Lourenço Marques (*J. J. Monteiro*).

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—"Zanzibar (*Raffray*)."—Oberthür. "Ribè."—Ward.

GENUS EUPHÆDRA.

Euphædra, Hübn., Verz. Bek. Schmett., p. 39 (1816).
Romaleosoma, Blanch., "Hist. Nat. Ins., iii. p. 448 (1840)."
Romalæosoma, Westw., Gen. Diurn. Lep., ii. p. 283 (1850).

IMAGO.—*Head* broad, shortly downy; *eyes* smooth, very prominent; *palpi* short, compressed, ascendant, convergent, not rising above summit of head, densely clothed with scales and appressed short hairs,—basal joint tufted with longer hairs beneath,—second joint superiorly with a tuft of hair near extremity,—terminal joint very short and small, almost hidden by terminal hairs of second joint; *antennæ* very long, slender, with a gradually-formed, very elongate, only slightly flattened club, rather blunt at tip.

Thorax very (in some species extremely) thick and rather long, especially in ♂; clothed with short fine down, moderately hairy above posteriorly. *Fore-wings* rather elongate, being slightly or moderately produced in apical portion; costa usually rather strongly arched; apex not pronounced; hind-margin slightly sinuated, slightly or moderately concave about middle; inner margin almost straight; costal nervure strong, ending considerably beyond middle; first and second subcostal nervules arising (the former at some distance, the latter considerably) before extremity of discoidal cell,—third at a little distance beyond extremity of cell and extending to apex,—fourth very short, arising not very far before, and terminating a little below, apex; upper disco-cellular nervule extremely short,—middle one short, slightly curved,—lower one rather long, oblique, slightly curved, very slender, joining third median nervule at a little distance beyond its origin; discoidal cell short, rather wide at extremity. *Hind-wings* broad, in ♂ somewhat (rarely much) produced in anal angular portion; precostal nervure strong, much curved; costal nervure extending to apex; upper disco-cellular nervule united to second subcostal nervule not far from the latter's origin,—lower one very attenuated, slightly curved, joining third median nervule at or just beyond its origin; discoidal cell very short, rather narrow; internal nervure strong, rather short; costa very convex at base, and thence moderately arched (more so in ♂); hind-margin more sinuated than in fore-wings; anal angle rather marked (rarely projecting as a short "tail"); inner margins very convex, forming a deep complete groove to beyond middle. *Fore-legs* of ♂ rather large; femur hairy beneath,—tibia and tarsus densely fringed with rather long hair,—the latter joint nearly half as long as the former; of the ♀ larger and longer, scaly, with only the femur hairy,—tarsus rather long, indistinctly articulated, sharply spinulose beneath towards extremity. *Middle* and *hind legs* thick, rather long; tibiæ slightly spinose above, strongly so beneath,—the terminal spurs long and rigid; tarsi long and thick, very spinose throughout, but more strongly so beneath.

Abdomen compressed, rather short, hairy on back near base.

Among the characters given above, those which best distinguish *Euphædra* are the broad head, small short palpi, very long straight antennæ, closed wing-cells, very short fourth subcostal nervule of the fore-wings, thick spinose legs, and very robust thorax. The last-named feature reaches its extreme in *E. Perseis* (Drury), but is almost as marked in *E. Eleus* (Dru.), where the volume of the thorax is larger proportionally than in the most robust *Charaxes*.

The colouring of the majority of the species is above black glossed more or less with dark-greenish or bluish-purple, and marked in the fore-wings with a bluish-whitish or dull-yellow subapical bar, and in the hind-wings with a central space of greenish or bluish inclining to whitish in the middle; while beneath the surface is of a yellowish- or bronzy-green, with numerous sub-basal and submarginal black spots, and in some species basal or discal spaces of purplish-crimson. A section of the genus, however, distinguished by the extraordinary size of the thorax above referred to, has the colouring more diversified, with a good deal of red on the upper side, and the body most conspicuously spotted with large white or whitish spots. Two of these, *E. Ruspina* (Hewits.), and (in a less degree) the allied *E. Eleus* (Drury), are indeed distinctly imitative of the slow-flying conspicuous Lithosiid Moth, *Aletis Helcita* (Linn.), in which the wings are brick-red with broad black white-spotted borders.

The genus is essentially Tropical African, and does not seem to have any representatives in Madagascar. About thirty-three species are recorded, many of which are so closely allied as to be very difficult to distinguish satisfactorily. I have not seen any recent mention of the habits of these butterflies; but a century ago Smeathman (as recorded by Drury, *op. cit.*) noted that they frequented the gloomiest shades of the West-African woods, often congregating about a puddle or moist spot. Only one species, the East-African *E. Neophron* (Hopffer), enters South Africa proper, occurring at Delagoa Bay; it is easily recognised by its general bluish-green upper side, and by the width and brightness of the oblique yellow bar crossing the apical black of the fore-wings.

99. (1.) Euphædra Neophron, (Hopffer).

Romaleosoma Neophron, Hopff., Monatsb. K. Akad. Wiss. Berl., 1855, p. 640, n. 9; and Peters' Reise n. Mossamb., Ins., p. 386, t. xxii. ff. 1, 2 [♀], (1862).

♂ *Romalæosoma Zambesia,* Feld., Reise d. Novara, Lep., iii. p. 430, n. 687 (1867).

Exp. al., 2 in. 6–11 lin.

♂ *Dull bluish-green; apical half of fore-wing black, crossed by a broad bar of ochre-yellow. Fore-wing:* two small round black spots about middle of discoidal cell, of which the lower spot is a little beyond the upper one; subapical oblique ochre-yellow bar extending from costa to hind-margin, its outer edge sinuated, its inner edge irregularly dentated; at apex a good-sized ochre-yellow spot. *Hind-wing:* all dull bluish-green, except near margins, which are rather narrowly bordered with brownish-grey, ill-defined on the inner edge. UNDER SIDE.—*Pale dull greyish-green, with a slight violaceous gloss, and a tinge of ochre-yellow over areas beyond middle. Fore-wing:* two spots in cell not so distinct; subapical bar and apical spot represented only by ill-defined dingy ochrey-whitish; traces of a submarginal row of imperfect whitish rings. *Hind-wing:* a small round black spot in discoidal cell, close to bifurcation of subcostal nervure; an indistinct central paler fascia; traces of a submarginal row of imperfect whitish rings, as in fore-wing.

♀ Similar to ♂. UNDER SIDE.—*Darker, violaceous gloss more apparent; all the markings much more distinct, whitish,* viz., in *fore-*

wing, the subapical bar (in its upper portion) and apical spot, the submarginal rings, and a short narrow median fascia; and in *hind-wing* the median fascia and submarginal rings.

This very handsome *Euphœdra* belongs to the group of which *E. Medon* (Linn.) is the type, but is very distinct from all its allies in the breadth and rich yellow tint of the subapical bar of the fore-wings. Oberthür (*Etudes d'Entomologie*, iii. p. 28) notes an example from "Tchouacka," in which the dull bluish-green of the upper side is replaced by violaceous.

I include *Neophron* in my list on the authority of Mr. W. F. Kirby's *Catalogue of the Hewitson Collection*, in which (p. 93) Delagoa Bay is given as one of the localities of the examples contained in that collection. The late Mr. J. J. Monteiro wrote to me in 1877 that he had taken the species at one spot about three miles from Lourenço Marques; and it is probable that Mr. Hewitson obtained it from him.

The examples that I have examined are from the Zambesi Valley and Zanzibar.

Localities of *Euphœdra Neophron*.

I. South Africa.
  H. Delagoa Bay.—Coll. Hewitson.

II. Other African Regions.
  A. South Tropical.
    b. Eastern Coast.—Zambesi Valley (*Rev. H. Waller*). "Querimba." Hopffer. Zanzibar.—Coll. Brit. Mus. "Tchouacka (*Raffray*)."—Oberthür. Magila.—Coll. W. Distant.
    *b*1. Interior.—Lake Nyassa.—Coll. Hewitson.

GENUS EURYPHENE.

Euryphene, Westw., Gen. Diurn. Lep., ii. p. 285 (1850).

IMAGO.—Nearly allied to *Euphœdra*. *Head* not so wide, with a tuft of hair in front; *palpi* longer, not so ascendant, not convergent.

Thorax much less robust, more hairy beneath. *Fore-wings* somewhat truncate, with apical angle more or less pronounced; hind-margin usually entire, occasionally slightly hollowed about middle; neuration as in *Euphœdra*, except that (in some species) third subcostal nervule originates very little beyond extremity of discoidal cell. *Hind-wings* larger, and in ♂ considerably lengthened inferiorly; hind-margin entire or very slightly sinuated; lower disco-cellular nervule very attenuated, sometimes almost obsolete. *Fore-legs* of ♂ not so densely hairy generally, but with a longer tuft of hairs at extremity of tarsus. *Middle* and *hind legs* with considerably longer, slightly curved femora; tibiæ only very finely spined beneath,—terminal spurs extremely small; tarsi long, scarcely spinulose above, and but moderately spinose beneath.

These characters, while serving to distinguish *Euryphene* from *Euphœdra*, for the most part approximate it to *Aterica*, Boisd., and *Harma*, Westw. From the two latter genera it differs, however, in its more hairy head and palpi, less robust thorax, origin much nearer to discoidal cell of third subcostal nervure of fore-wings, larger fore-legs in ♂, and much longer middle and hind legs in both sexes.

The limits of *Euryphene*, *Aterica*, and *Harma*—all purely Ethiopian genera—are by no means well defined, and authors appear of late years to have referred newly-discovered species to them somewhat at random. *Aterica*, founded by Boisduval in 1833, is the oldest in date, and its type was *A. Rabena*, Boisd., of Madagascar. *Euriphene* (*sic*) was proposed, but not defined, by Boisduval in 1847 (Appendix to Delegorgue's *Voyage dans l'Afrique Australe*, p. 592) for a South-African butterfly (*E. cærulea*, Boisd.) brought from Natal; and it was Westwood (*op. cit.*) who first gave a diagnosis of *Euryphene*, adding to *E. cærulea* the Fabrician species, *Sophus* and *Absolon*, with *Doriclea*, Drury, and seven others referred with doubt to the group. Among the numerous species since added to the genus, such differing forms as *E. Comus*, *Nivaria*, and *Porphyrion*, of Ward, and *E. Soemis*, *Phantasia*, *Aramis*, and *Doralice*, of Hewitson, seem ill associated with *E. cærulea* and its allies; and those of them which prove not to be better placed with *Aterica* (or some possibly with *Harma*) will probably require new genera for their reception. *Harma*—also characterised by Westwood in 1850—is a more homogeneous group in general *facies*, but, as its founder pointed out, variable in neuration; and in nearly all respects its structure agrees with that of *Aterica*.

E. cærulea would appear to be a very rare butterfly, as no example has to my knowledge occurred in any collection made in Natal or the neighbouring regions since the time of Delegorgue's visit. It is, however, a species of small size and dark colouring, and if, like some of its congeners in Western Africa, it frequents the shadiest parts of the woods and is not very active, it would easily escape observation. No other *Euryphene* is recorded from Southern Africa, nor does the genus appear to be represented in Eastern Africa, all the species except *E. cærulea* being natives of Tropical Western Africa to the north of the Equator.

100. (1.) **Euryphene cærulea**, Boisduval.

Euriphene cærulea, Boisd., App. Voy. de Deleg., p. 592, n. 77 (1847).

Habit and size of *Guineensis*.[1]—*Deep-blue*, as in *Veronica*, Cram.; near hind-margin of *both* wings a row of oval spots rather darker than ground-colour, succeeded by a marginal streak of the same hue. Basal portion of wings, as far as middle, of a *darker hue* than ground-colour; and on this darker portion, in *fore-wing*, are two or three annular spots of paler blue, situated transversely between costa and median nervure.

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[1] This seems to be only a manuscript name of Boisduval's, and is by Westwood (*Gen. Diurn. Lep.*, ii. p. 286) doubtfully given as a synonym of *E. Absolon* (Fab.)

UNDER SIDE.—*Brownish-red*, as in *Veronica*, with some paler transverse striæ; beyond middle, as in *Veronica*, a transverse series of small whitish dots.

The above description is adapted from Boisduval's brief diagnosis. In 1867 the late Mr. W. C. Hewitson showed me a specimen which had been lent to him by Boisduval, and I noted at the time that it seemed to agree very fairly with the characters noted in the Appendix to Delegorgue's *Voyage*, but had not an opportunity of fully describing it.[1] The *Veronica* of Cramer (*Pap. Exot.*, iv. t. cccxxv., C, D), with which Boisduval compares *E. cærulea*, is a native of Western Africa, placed doubtfully in the genus *Aterica* by Westwood, and in the pattern of the under side having apparently some resemblance to *H. Dædalus*, Fab. (=*Meleagris*, Cram.), with which, indeed, Hübner associates it in his genus *Hamanumida*.

Locality of *Euryphene cærulea*.

- I. South Africa.
  - E. Natal.
    - *a*. Coast Districts.—"Port Natal."—Boisduval.

GENUS HAMANUMIDA.

Hamanumida, Hübn., Verz. Bek. Schmett., p. 18 (1816).
Aterica (part), Westw., Gen. Diurn. Lep., ii. p. 286 (1850); Trim., Rhop. Afr. Aust., i. p. 156 (1862).

IMAGO.—*Head* not quite so broad as thorax, hairy in front; *eyes* smooth; *palpi* short, not or very slightly convergent, projecting forward, rising to about a level with top of head,—basal joint with a tuft of hair beneath,—second joint long, scaly, hairy superiorly and along inner edge,—terminal joint very short, scaly; *antennæ* of moderate length, with a well-marked but elongate sub-cylindrical club, blunt and rounded at its tip.

Thorax robust, rather long, clothed with a fine close down, and finely hairy posteriorly (especially on back). *Fore-wings:* in ♂ subacuminate, in ♀ scarcely prominent, apically; costa moderately arched; hind-margin almost imperceptibly concave about middle, scarcely sinuate; inner margin almost straight; costal nervure strong, its extremity not far beyond middle; first and second subcostal nervules originating near each other, before extremity of discoidal cell,—third one very short, originating not far from apex (where it terminates),—fourth extremely short, originating half way between base of third and apex (a little below which it terminates); upper disco-cellular nervule exceedingly short,—second one short, oblique, strongly curved,—third long, well-developed, slightly angulated about its middle, joining third median nervule at some distance from latter's origin. *Hind-wings:* large, prolonged inferiorly (especially in ♂); costa very prominent at base, thence moderately arched; hind-margin slightly sinuated; anal angle rather pronounced in ♂, rounded in ♀; inner margins forming a complete but not deep groove; costal nervure extending to apex; upper disco-cellular nervule rather long, united to second subcostal nervule not very far from latter's origin, bent slightly outward,—lower one slender but quite distinct, gently curved, joining third median nervule just beyond latter's origin; internal nervure short, not reaching beyond middle of inner margin; discoidal cell very short. *Fore-legs* of ♂ very slender, scaly,—femur with a fringe of hair beneath, tibia considerably shorter than femur,—tarsus less than half as long as tibia, tufted thinly with fine hairs; of the ♀ much larger and thicker, with tarsus distinctly articulated, not at all hairy, fully two-thirds the length of tibia, and spinose near extremity beneath. *Middle* and *hind legs* rather long and thick; femora smooth, slightly curved; tibiæ spinulose above, armed beneath (especially middle pair) with unusually long spines, and with long terminal spurs; tarsi thick, finely spinulose above, very spinose beneath, with terminal pair of spines on each articulation longer than the rest.

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[1] Hewitson (*Exot. Butt.*, iii. p. 53, 1866) notes as follows, viz.:—"*E. cærulea*, of Boisduval, which he has kindly lent me for comparison, resembles *Veronica* more closely than *Tadema*" [described by Hewitson as an *Aterica*], "and is also without the apical white spots."

Abdomen short (less than half as long as inner margins of hind-wings); very slender in ♂.

I have followed Mr. Kirby (*Synon. Cat. Diurn. Lep.*, 1871, p. 249) in adopting for *Dædalus*, Fab. (= *Meleagris*, Cram. and Drury), distinct generic rank from *Aterica* under Hübner's name, *Hamanumida*, because, on comparison with *A. Rabena*, Boisd., the type of *Aterica*, I found that the characters of the former (which are those given above) differed very considerably from those of the latter. Besides the closed cell of the hind-wings noted by Westwood (*loc. cit.*), *Dædalus* presents the following differences from *Aterica*, viz., antennæ much shorter, with very much shorter, thicker, more cylindrical, and bluntly-tipped club; palpi much more hairy both above and inwardly; thorax longer and more robust; fore-wings less acuminate apically, especially in ♀, with the third subcostal nervule originating much nearer to apex, and the lower disco-cellular nervule shorter; hind-wings not so prolonged inferiorly, with costa not at all hollowed beyond middle, and more roundly convex at base, and with the upper disco-cellular nervule much longer, and not forming merely a curved base for the radial nervule; fore-legs of the ♀ with tarsal joints more distinct; middle- and hind legs with the tibiæ much more strongly spined; and abdomen shorter.

I have not had the opportunity of examining the West-African *Veronica*, Cram., which (as noted above under *Euryphene cærulea*) looks much like *Dædalus*, and cannot, therefore, judge whether Hübner rightly associated that species with *Dædalus* in his genus *Hamanumida*.

Cramer's name of *Meleagris* so well indicates the guinea-fowl style of colouring of *Dædalus* that it could be wished the Fabrician title had not priority. The butterfly has a very wide distribution over the Tropical parts of Africa, but is seldom met with in South Africa proper. From the accounts of collectors who have observed its habits, it appears to be an active insect, frequenting open spots as well as woods, and often settling on the ground.

101. (1.) **Hamanumida Dædalus**, (Fabricius).

Papilio Dædalus, Fab., Syst. Ent., p. 482, n. 174 (1775).
Papilio Melantha, Fab., *op. cit.*, p. 513, n. 297.
Papilio Meleagris, Cram., Pap. Exot., i. t. lxvi. ff. A, B (1779).
" " Dru., Ill. Nat. Hist., iii. pl. xxvii. ff. 3, 4 (1782).
" " Fab., Ent. Syst., iii. 1, p. 128, n. 393 (1793).
Nymphalis Meleagris and *N. Dædalus*, Godt., Enc. Meth., ix. pp. 387–388, nn. 130–131 (1819),
Vanessa (*Adolias*) *Meleagris*, var., Reiche, in Ferr. and Gal. Voy. en Abyss., Ent., p. 468, pl. 32, ff. 3, 4 (1849).
Aterica Meleagris, Westw., Gen. Diurn. Lep., iii. p. 287 (1850).
" " Trim., Rhop. Afr. Aust., i. p. 157, n. 93 (1862).

Exp. al., 2 in. 2 lin—2 in. 7 lin.

Soft brownish-grey, with transverse rows of white black-edged spots. Fore-wing: in discoidal cell two irregular, zigzag, transverse black lines, each more or less conspicuously bordered with white, and *enclosing a white dot* at their commencement; closing cell is a similar streak, but annular, and shaped like the figure 8; beyond cell, three transverse rows of white spots commence on costa,—first row considerably sinuate, from costa beyond middle to inner margin a little before middle, consisting of seven or eight spots (only black-edged on their *inner* side),—second row straighter, consisting of eight spots *ringed* with black, but not extending below submedian nervure,—third row close and parallel to hind-margin, small, lunular, only black-edged on their *inner* side (the first spot in ♂ enlarged so as to form a *small white tip* to wing at apex). *Hind-wing:* three transverse rows of spots in *fore-wing* continued across this wing, the innermost and middle rows only as far as first median nervule, the outer row to anal angle; a thin black ring *in* discoidal cell, another closing cell, and a third indistinct one touching the latter ring *superiorly*. *Cilia* grey, spotted with white between nervules. UNDER SIDE.—*Rich ochreous, tinged with brown*, deeper towards hind-margins; spots mostly rather larger than on *upper side*, but not so sharply defined; second transverse row of spots grey-margined on their *outer* edge, making them appear ocellated; spots in outer row united to hind-marginal edge by short dark-grey streaks. *Fore-wing:* a greyish space at anal angle; annular streak at extremity of discoidal cell enclosing a whitish space. *Hind-*

wing: first and second rows of spots both extending to submedian nervure by an additional spot; black rings in cell enclosing white spots.

In some specimens the ground-colour of under side is more obscured than described above, and the white spots are indistinct. This is the form first described by Fabricius under the name of *Dædalus.* His type-specimen of *Melantha,* too—which I have examined in the Banksian Collection of the British Museum—has the under-side spots almost obsolete. In the same collection there is a specimen with the spots in question well marked; and in the *Entomologia Systematica* (p. 128) Fabricius describes as *Meleagris* a specimen with the white spots on the under side, and notes, "Mus. D. Banks."

Mr. Druce (*Proc. Zool. Soc. Lond.*, 1875, p. 411) notes that specimens from Angola were "very pale-coloured, with the white spots much smaller than in specimens from Old Calabar."

This well-known and widely-dispersed native of Tropical Africa is far from common in South Africa proper, to judge from the few examples that have reached me. Mr. W. Morant, who took two specimens near Pretoria in March 1872, wrote to me that one was met with frequenting bare patches of ground on the top of a rocky hill, and the other settling on a sandy footpath in low ground. These two specimens were of opposite sexes, and both white-spotted on the under side, but not conspicuously so. The only example sent by Colonel Bowker from D'Urban (February 1883) is also white-spotted beneath; he described its habits as like those of *Pyrameis Cardui,* and noted that it settled on a footpath with wings expanded.

Localities of *Hamanumida Dædalus.*

- I. South Africa.
    - E. Natal.
        - *a.* Coast Districts.—D'Urban (*M. J. M'Ken* and *J. H. Bowker*).
    - F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).
    - H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).
    - K. Transvaal.—Lydenburg District (*T. Ayres*). Rustenburg (*V. E. Noren*). Pretoria (*W. Morant*). Limpopo River (*F. C. Selous*).
- II. Other African Regions.
    - A. South Tropical.
        - *a.* Western Coast.—Damaraland (*C. J. Andersson* and *J. A. Bell*). "Angola (*J. J. Monteiro*)."—H. Druce.
        - *b.* Eastern Coast.—Zambesi Valley (*Rev. H. Rowley*). "Querimba."—Hopffer. "Kiriama (*Kersten*)."—Gerstäcker.
        - *b*1. Interior.—Shashani River (*F. C. Selous*). "Umvungu (*F. Oates*)."—Westwood.
    - B. North Tropical.
        - *a.* Western Coast.—Cape Coast Castle (*J. M. Pask*). Cape Palmas (*E. Bourke*). Sierra Leone (*A. N. Innes*).
        - *b.* Eastern Coast.—"Abyssinia: Shoa (*Antinori*)."—Oberthür.

Genus HARMA.

Harma, Westw., Gen. Diurn. Lep., ii. p. 287 (1850).

Imago.—*Head* of moderate size, with a tuft of hair on vertex and in front; *eyes* smooth; *palpi* short, scaly, inserted rather widely apart, and not or slightly convergent at tips, basal joint hairy beneath, middle joint long, rather thick, more or less hairy above and on inner side, terminal joint very short, conical; *antennæ* long or rather long, with a very gradually formed, elongate, sub-cylindrical club. *Thorax* moderately robust, clothed above with close short down (anteriorly and posteriorly with moderately-long hair), beneath with short hair. *Fore-wings* usually elongate apically, but often truncate; costa moderately or rather strongly arched; apex more or less pronounced, sometimes rather acuminate; hind-margin slightly sinuated, usually more or less sub-angulated below apex, excavated about middle, and prominent again above posterior angle; inner margin nearly straight; costal nervure terminating not far beyond middle; first subcostal nervule originating at some distance before extremity of discoidal cell,—second a little before, just at, or a very little beyond, extremity of cell,—third at a long distance beyond cell and terminating at apex,—fourth very short, originating not far before apex and terminating a little below it; disco-cellular nervules as in *Hamanumida*, but less oblique.[1] *Hind-wings* large, usually more or less prolonged inferiorly, especially in ♂ (where anal angle itself is often produced into a blunt point); costa almost straight beyond strong basal convexity; hind-margin more sinuated than in fore-wing, sometimes with prominence at extremity of second subcostal nervule; inner margins meeting to form a deep, broad groove to beyond middle, and thence separated; costal nervure extending to apex; upper disco-cellular nervule united to second subcostal not far from latter's origin, and forming little more than a footstalk for radial nervule; lower one usually wanting entirely,—when present, much attenuated; internal nervure extending to about or considerably beyond middle. *Fore-legs* of ♂ very small and slender, femur densely hairy beneath, tibia and tarsus rather densely fringed with hairs on each side, less hairy superiorly; of ♀ considerably larger and thicker, femur thinly hairy beneath; tibia three-fourths as long as femur, smooth, scaly; tarsus about half as long as tibia, indistinctly articulate, scaly, with a few spines beneath at tip. *Middle* and *hind legs* thick, rather short, scaly; tibiæ with short spines beneath and moderately-long terminal spurs; tarsi rather strongly spinose beneath.

Abdomen short; compressed in ♂.

Harma is nearly related to *Aterica*, Boisd., differing chiefly in its shorter antennæ; thicker, less ascendant, more hairy, and more separated palpi; more hairy fore-legs in ♂; shorter middle and hind legs; and (usually) longer, sub-angulated fore-wings, and anal-angular projection in hind-wings. These characters, with the exception of shorter antennæ and the greater hairiness of the palpi, also serve to distinguish it from *Hamanumida;* and it further differs from the latter in its longer antennal club, not blunt at its extremity; more hairy breast;

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[1] Westwood (*loc. cit.*) describes the South-African *H. Eupithes* (= ♂ *Alcimeda*) as having the discoidal cell open in all the wings; but I find the lower disco-cellular nervule distinct, though very slender, in the fore-wings.

different points of origin of the first, second, and third subcostal nervules of the fore-wings; longer internal nervure and less developed upper disco-cellular nervule of the hind-wings; and much less spinose middle and hind tibiæ.

The butterflies of this genus are very variable in the outline of their wings, and the females appear almost always to have longer and more angulated (though often apically less acute) fore-wings than the males. As, besides this, the disparity in the upper-side colouring and marking of the sexes is very great, and is noticeable also in some cases with regard to the under side, much difficulty is experienced in satisfactorily determining the limits of the species. The males are almost unicolorous above, the field of creamy or greenish white, pale or deep ochre-yellow, or (in two cases) deep-red, being varied only by some fuscous hind-marginal zigzag edgings, and (more rarely) discal clouding; while the females are strikingly different and very varied in pattern, for the most part rather resembling *Limenitis* in their white or ochre-yellow banding on a dark-brown or fuscous ground. On the under side both sexes bear numerous fine, dark, broken striæ and striolæ, and a common more strongly marked discal transverse streak on a pale or deep ochreous or ochreous-and-ferruginous ground; but in two cases the females have a shining pale-greenish under side with the white markings of the upper side reproduced.

Thirty-two species have been recorded, all from Tropical Africa except the South-African *H. Alcimeda* (Godt.), which is the smallest of the genus. No other South-African species has been described; but I have received from Natal a much-broken ♂ *Harma*, taken by Colonel Bowker, which is larger and paler and has much longer antennæ than the ♂ *Alcimeda* (= *Eupithes*, Westw.), and which I believe will be found to represent a distinct species. It is only in wooded tracts that *H. Alcimeda* is to be met with, but the insect is rather widely distributed, occurring as far to the south and west as the district of Knysna in the Cape Colony.

102. (1.) **Harma Alcimeda**, (Godart).

♀ *Nymphalis Alcimeda*, Godt., Enc. Meth., ix. p. 384, n. 112 (1819).
♂ *Harma Eupithes*, Westw., Gen. Diurn. Lep., ii. p. 289, pl. 41, f. 1 (1850).
,, ,, Trim., Rhop. Afr. Aust., i. p. 160, n. 95 (1862).
♀ *Harma Alcimeda*, Trim., *op. cit.*, p. 159, n. 94.

Exp. al., 1 in. 9 lin.—2 in. 1 lin.

♂ *Cream-colour, with a slight yellow tinge; bordered with two brownish-fuscous lunulated streaks. Fore-wing:* base suffused with fuscous-grey, most widely on inner margin; in discoidal cell, about its middle, a small irregular imperfect fuscous ring, open on median nervure, and with the outer edge prolonged downward in a curved line almost to submedian nervure; a large somewhat quadrate fuscous marking, dusted with creamy scales, occupying outer fifth of cell, extending some distance beyond and a little below it, and enclosing a narrow stria of the ground-colour at the extremity of cell; costa with a linear edging, apex and hind-margin with a narrow border of dark-brown; just before the latter two parallel brownish-fuscous lunulated streaks,—the lunules composing the inner streak thinner and acuter than those of the outer one (except the three next inner margin, which are thick and somewhat suffused), while in the outer streak, the two middle lunules are conspicuously larger and thicker than the rest; nervules fuscous near hind-margin. *Hind-wing:* a basal fuscous-grey suffusion, darkest in discoidal cell, and extending narrowly along sub-median nervure almost to anal angle; subcostal and median nervures and parts of their nervules fuscous; two lunulate streaks as in fore-wing, but rather more regular, and the outer one more distinctly separate from hind-marginal border; this border is like that of fore-wing, but varied by a row of seven orange-ochreous spots[1] at ends of nervules, the sixth being largest and sometimes confluent with the seventh (at anal angle). *Cilia* fuscous, with white inter-nervular dots. UNDER SIDE.—*Dull pale-ochreous, slightly tinged with ferruginous;* varied in basal half by linear fuscous striæ, edging short fasciæ somewhat darker than ground-colour (which represent the upper-side markings); *an indistinct linear reddish-brown discal streak from costa of fore-wing to anal angle of hind-wing. Fore-wing:* a small imperfect ring enclosing a darker space immediately below median nervure; lunulate sub-marginal streaks very faintly indicated by greyish marks. *Hind-wing:* in cell a linear 8-like mark; a double linear streak closing cell; traces of a highly irregular transverse linear streak just about middle; lunulate streaks rather better indicated than in fore-wing; hind-marginal orange-ochreous spots duller, less distinct than on upper side.

♂ *Fuscous, with a transverse discal creamy-white band. Fore-wing:* a conspicuous, externally angulated, short, transverse, white stria near extremity of discoidal cell; a similar, but straighter and more macular stria, some distance beyond cell, from subcostal nervure to third median nervule; transverse band beginning narrowly and indistinctly near costa not far from apex (where it is tinged with yellow-ochreous), but abruptly widening on third median nervule (where the outer white stria meets it),—its outer edge deeply scalloped between nervules; just following band, a transverse row of six small white spots, one spot marking each inter-nervular excavation of the band; beyond the white spots a series of very indistinct blackish ones, succeeded by traces of a streak paler than the ground-colour. *Hind-wing:* transverse band much as in fore-wing, but wider, and though narrowed near costa quite distinct there; outer edge of band not so deeply scalloped; succeeding series of white spots, blackish spots, and pale lunulate streak as in fore-wing, but the two latter more distinct; orange-ochreous hind-marginal spots more conspicuous than in ♂. UNDER SIDE.—*Pale brownish-grey tinged with ferruginous; discal area with a lilacine gloss;* the white markings as on upper side, but duller; other markings in basal area as in ♂; common discal brown streak better marked.

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[1] One specimen has minute similar spots on hind-margin of the *fore-wing.*

One ♂ specimen from the Knysna District of the Cape Colony has *the under side almost as pale as the upper side*, with all the streaks (except the common discal one) better defined.

VAR. A.

Expl. al., (♂) 1 in. 11 lin.—2 in. 3 lin.; (♀) 2 in. 3–7 lin.

♂ *Paler; in fore-wing the markings in and about discoidal cell wanting*, as well as all but the lowest portion of the inner submarginal lunulate streak; in hind-wing the same streak is often obsolete in its middle portion. UNDER SIDE.—*Paler* (like the Knysna specimen just mentioned, but with *the common discal brown streak strongly marked*), with all the markings more distinct; in some examples the darker parts in basal half, as well as a hind-marginal suffusion, are *warm-ferruginous.*

♀ *Transverse white band broader, especially in hind-wing;* submarginal blackish spots considerably larger and more distinct. *Fore-wing:* disco-cellular white stria attenuated, more angulated; costal white stria beyond cell distinctly broken into three spots and continued inferiorly by two more or less distinct small spots, between third and first median nervules, immediately before transverse band. UNDER SIDE.—Markings more distinct; colouring varying from that nearly resembling the type-form to almost general warm-ferruginous,—intermediate examples occurring only variegated with ferruginous.

Aberrant ♀s of this large variety occur having the common transverse band *ochre-yellow* instead of white. In one specimen, taken by Colonel Bowker in Kaffraria, the yellow band is much obscured and partly obliterated by dull-brownish suffusion.

This smallest of the genus *Harma* is allied to *H. Cœnis*, Dru., from West Africa, but very much less in size. The ♂ is distinguished also by the fore-wings being more produced apically, and the hind-wings much more at anal angle; by the possession of orange-ochreous hind-marginal spots; and (on the under side) by the absence of the greenish tint so pronounced in *Cœnis*, and by the common transverse brown streak not being nearly so straight. The ♀ of *Cœnis* appears to be *Althœa*, Cram., and from this the ♀ *Alcimeda* differs in possessing a conspicuous disco-cellular white mark; in presenting, immediately beyond common white band, a series of small white spots instead of one of large suffused sub-hastate marks, and in having bright orange-ochreous hind-marginal spots.[1]

I have regarded as the type-form the smaller race found in the south of the Cape Colony, because Godart describes the ♀ as being only about two inches in expanse of wings. The ♂ belonging to this is that figured by Westwood

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[1] I have not seen any specimens of *H. Amphiceda*, Cram. (*Pap. Exot.*, ii. t. cxlvi. ff. D, E), but, from the figure, it seems in size and pattern to be nearly related to *H. Alcimeda*, *var.*, but has in both wings the submarginal markings very much darker and much more sharply dentated. Its locality is given as the Coast of Guinea.

(*op. cit.*) as *H. Eupithes*, with the fuscous markings on upper side of basal half of fore-wings.

The variety first appears farther eastward near King William's Town, and prevails in Kaffraria Proper and Natal, extending also to the Eastern Transvaal. The entire absence of the upper-side markings just referred to gives the ♂ a very distinct aspect; but I have not found any other character to separate it from the type-form.

H. Alcimeda frequents woods only. I saw the ♀ at Knysna, and took it on the Tugela frontier of Natal. In the latter locality both sexes were frequenting the same spot, but the ♂ s kept high up out of reach. Both sexes are, however, fond of settling on damp mud, Archdeacon Kitton having taken many so engaged in the Perie Bush. A ♀ sent to me from Knysna was caught settled on the ground in a sheep-kraal. Colonel Bowker forwarded a good many examples of both ♂ and ♀ from the Tsomo River in Kaffraria, and also from near the mouth of the Kei River. In the latter locality he noticed the ♂ s seated with expanded wings on the damp sand, while the ♀ s were more active in flitting about, and were occasionally pursued by the ♂ s. *Alcimeda* has been noticed on the wing in December, February, March, and April.

Localities of *Harma Alcimeda*.

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Knysna. Zitzikamma (*W. Fitzherbert*).
    b. Eastern Districts.—King William's Town (*Ven. H. Kitton.—Var.*) Kei River (*J. H. Bowker.—Var.*)
  D. Kaffraria Proper.—Tsomo and Bashee Rivers (*J. H. Bowker.—Var.*)
  E. Natal.
    b. Upper Districts.—Tunjumbili, Tugela River.—*Var.*
  K. Transvaal.—Lydenburg District (*T. Ayres.—Var.*)

Genus CHARAXES.

Charaxes, Ochs., "Schmett. Europ., iv. p. 18 (1816);" Herr.-Schäff., Syst. Bearb. Schmett. Europ., i. p. 45 (1843).

Nymphalis, Latr. [part], Encyc. Meth., ix. pp. 10, 11 (1819); Westw., Gen. Diurn. Lep., ii. p. 306 (1850); Trim., Rhop. Afr. Aust., i. p. 165 (1862).

IMAGO.—*Head* rather broad, densely clothed with velvet-like down; *eyes* large, smooth, very prominent; *palpi* of moderate length or rather long, well separated, more or less convergent, ascendant, rising considerably above top of head, clothed with closely-appressed scales and scaly hairs,—basal joint inferiorly tufted with hair,—middle joint long and thick, clothed superiorly with short hair,—terminal joint small and slender, sometimes short and conical, sometimes more elongate; *antennæ* rather short, thick, straight, with a gradually formed, but very distinct, rather thick, almost cylindrical, blunt club.

Thorax extremely thick and long, especially in ♂; clothed with very fine, close, thick down, hairy posteriorly on back and inferiorly on prothorax. *Fore-wings* rather broad, apically more or less acuminate; costa moderately or rather strongly arched, its edge horny and very finely serrated to beyond middle; hind-margin entire or gently sinuated, more or less hollowed about its middle, but very prominent above and at posterior angle,—sometimes angulated or sub-angulated below apex; inner margin almost straight; nervures very strong and rigid; costal nervure very thick, ending at or a little beyond middle,—first subcostal nervule originating little more than half way between base and extremity of discoidal cell,—second at a little distance before, third at a little distance beyond extremity, the latter ending at apex, fourth not far beyond third, very long, bent downward not very far before apex; upper and middle disco-cellular nervules very short (the latter rather the longer), not oblique, slightly curved,—lower one very much longer, more slender, slightly or more strongly-curved, joining third median nervule at a considerable distance from latter's origin; discoidal cell short, narrow. *Hind-wings* broad, rather truncate, sometimes more or less produced at anal angle; costa strongly or very strongly arched; apex rather marked; hind-margin sinuated or moderately dentated, tailed usually on third and first median nervules, but sometimes only on the former, and rarely (in ♂) only on the latter; inner margins long, forming a broad, deep, complete groove, but more or less emarginate beyond middle; precostal nervure thick, transverse, abruptly bent outwardly near its extremity; costal nervure much curved, terminating at apex; upper disco-cellular nervule forming the much-curved base of radial nervule, and united to second subcostal nervule at some distance from latter's origin,—lower one either wanting or extremely attenuated (in the latter case joining median nervure just at origin of its third nervule); internal nervure very strong, short, ending at about middle of inner margin. *Fore-legs* of ♂ extremely small, rather thickly clothed with downy hair,—tibia and tarsus together about as long as or a little longer than femur,—tarsus very short; of ♀ much larger and longer, scaly,—femur inferiorly finely hairy, especially towards extremity,—tarsus about as long as tibia, thickened and obliquely truncate at extremity (which bears inferiorly three pairs of short spines), with articulations scarcely defined. *Middle* and *hind legs* short, thick, scaly; tibiæ considerably shorter than femora, often finely and thinly spinulose generally, with two inferior rows of short spines, and short terminal spurs,—tarsi thick, densely spiny beneath, sometimes finely spinulose above.

Abdomen short, moderately stout in ♂, very robust in ♀; tufted with silky hair inferiorly at base.

Larva.—Finely granulated, thickened about middle, attenuated towards tail, without spines on body; head large, wide, flattened, prognathous, and sloping backward, crowned with four spinose horns or processes; anal segment more or less bifid.

Pupa.—Very thick, rounded, smooth; back extremely convex; head very bluntly bifid; anal segment with two small round tubercles inferiorly, and four others at its extremity round base of pedicel; back of thorax globosely prominent, not ridged.

Charaxes shares with the South-American genera *Aganisthos*, *Agrias*, and *Prepona* the distinction of being the most massively-formed as well as the swiftest of known *Nymphalinæ*. There seems structurally to be little or no difference warranting the separation of either *Agrias* or *Prepona* from *Charaxes*, but they respectively present characteristic pattern and coloration, and their males usually have a whorl or tuft of hairs on the submedian nervure of the hind-wings. *Aganisthos* and also *Megistanis* (another South-American group, very like *Charaxes* in pattern and outline) are separable at once by the very short fourth subcostal nervule of the fore-wings. The great length and downward subterminal flexure of this nervule are apparently peculiar to *Charaxes*, *Agrias*, and *Prepona*.

The Ethiopian Region is the metropolis of this large and striking genus, but it is fairly represented both in the Oriental and Australian Regions, and single species are recorded from the Fijian and New Caledonian Islands, in addition to the well-known Mediterranean *C. Jasius*, Linn., which is, however, quite African in character. Out of about eighty recorded species, fifty are proper to the Ethiopian Region, eight of them being peculiar to Madagascar. South Africa has now yielded fifteen species, of which five—*C. Pelias* (Cram.), *Ethalion* (Boisd.), *Phœus*, Hewits., *Xiphares* (Cram.), and *Cithæron*, Feld., seem to be endemic.

In addition to their exceptional strength of structure, the species of *Charaxes* are rendered conspicuous by their size, and by the great beauty of their colouring and markings. Except *C. Jahlusa* (Trim.), *Zoolina* (Westw.), and *Neanthes* (Hewits.), all the South-African species are large, *C. Xiphares* (Cram.) and *Castor* (Cram.) even attaining an expanse of wings of nearly 4½ inches, and several others expanding 3¾ inches. In the majority, the upper side has the ground-colour blackish, with white, ochre-yellow, fulvous, or blue stripes and spots, while the under side is often most intricately streaked and marbled with pearly and olive-greys, or with many white-bordered shining-black spots on a ferruginous ground, and margined with violet or greenish and yellowish lunules. In *C. Varanes* (Cram.) and *Neanthes* (Hewits.), the under-side colouring is beautifully imitative of faded leaves; and in *Jahlusa* (Trim.), its exquisite grey and silver resembles the shining white bark of a tree frequented by the butterfly. In some sections of the genus (including that of *Xiphares* and its allies) the sexes differ very considerably, not only in size, but in the pattern and colouring of the upper side, so that in several cases they have been described as distinct species.

Nearly all the known species are strictly sylvan, but *C. Pelias* (Cram.) frequents more open mountainous country, settling, however, on the taller shrubs or small trees growing in such tracts.[1] I am not aware that any species except *C. Zoolina* (Westw.)—which Colonel Bowker found about a yellow-blossomed thistle in Kaffraria—resorts to flowers for food; the moisture exuding from wounds in the trunks and branches of trees being the favourite drink of these butterflies, which are also attracted by damp earth, the droppings of animals, and even decomposing carcasses. Honey and the entomological "sugar" also readily entice some of the species. In velocity of flight the larger species of *Charaxes* excel all other butterflies; and if it were not for their eagerness to drink, and their other constant habit of returning after a brief excursion to the same branch or bare twig which they fancy, the collector might almost despair of capturing them at all, especially the males. Notwithstanding the thickness and rigidity of their wings, they soon fracture the extremities by fluttering among rough twigs in search of food or in pursuit of each other, and acquire a worn and tattered appearance, the slender tails of the hind-wings being earliest broken or lost altogether. In these appendages of the hind-wings there is considerable variety; they are usually two in number on each wing, and situated on the third and first median nervules respectively; but in *C. Varanes* (formerly included in the genus *Philognoma*) only that on the third nervule is present, and in the males of *C. Zoolina* and *Neanthes*, while the females have two tails, there is but one on the first nervule.[1]

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[1] In these habits *C. Pelias* resembles its near congener *C. Jasius*, which haunts the Arbutus (the food-plant of its larva) on the hills and mountain-sides of the countries bordering the Mediterranean.

As regards distribution in South Africa, the coast of Natal is apparently the centre of the group, ten of the fifteen species being known to me to occur there. Of the other five, *C. Castor* and *Phœus* are recorded from Delagoa Bay only; *C. Xiphares* ranges from Knysna in the Cape Colony to the Bashee and Tsomo Rivers in Kaffraria Proper; *C. Pelias* represents *C. Saturnus* in the Western Districts of the Cape; and *C. Jahlusa*, occurring in the east of the Colony, Kaffraria, and also on the Zambesi, is most probably a native of Natal and other intervening countries as well. Besides *Xiphares*, *Pelias*, and *Jahlusa*, only *Ethalion* and *Varanes* inhabit the Cape Colony, extending westward as far as the George District.

103. (1.) **Charaxes Zoolina**, (Westw).

♀ *Charaxes, n. sp.*, Angas, Kafirs Illustr., pl. xxx., f. 7 (1849).
♀ *Nymphalis Zoolina*, Westw., Gen. Diurn. Lep., pl. liii. f. 1 (1850).
„ „ Trim., Rhop. Afr. Aust., i. p. 178, n. 103; and (♂) ii. p. 341 (1862 and 1866).

Exp. al., (♂) 2 in. 1–3 lin.; (♀) 2 in. 5–7 lin.

♂ *Whitish-sulphureous inclining to greenish, with fuscous hind-marginal border. Fore-wing:* border very broad apically, reaching almost to end of discoidal cell, but narrowing much to posterior angle; border contains five (rarely six) spots of the ground-colour, viz., two near costa, about midway between end of cell and apex,—two below and beyond these two, one on each side of third median nervule,—and one near apex,—the sixth, when present, being much smaller than the rest, and between second and first median nervules; costa to about end of cell narrowly bordered with ochreous-brown; a conspicuous short fuscous transverse bar closing extremity of cell, and a small, rather indistinct fuscous spot in cell, about the middle, touching subcostal nervure. *Hind-wing:* border of moderate width, containing eight very small spots of the ground-colour, of which the three next anal angle are tinged with violaceous-blue; before these spots the band encloses a more or less indistinct and interrupted lunulate streak of the ground-colour, from anal angle (where it is tinged with yellow-ochreous) as far as radial nervure, and beyond them a hind-marginal ochreous-yellow lunulate streak becoming broken and almost obsolete towards apex; tail (on first median nervule) blackish, with a fine central streak of the ground-colour. In *both wings* a median dusky streak of the under side is faintly shown on the upper side. UNDER SIDE.—*Paler, with a silvery glitter over hind-wing and the pale marginal markings of fore-wing; the marginal borders and transverse stripes pale-brown. Fore-wing:* discoidal cell crossed, before its middle, by a short broad stripe, emitting superiorly a striola extending to base; a longer similar stripe at extremity of cell extending to, and abruptly ending at, the fold between first median nervule and submedian nervure; spots in apical and hind-marginal border enlarged and more numerous, a third (superior) being added to the inner group of two near costa,—while the apical spot and lower group of two are completely merged in a continuous submacular band (immediately followed by a lunulate interrupted streak of the same silvery tint) running from apex to posterior angle; costal edge brown, with a good-sized silvery mark at base. *Hind-wing:* a stripe in line with the outer of the two in fore-wing, commencing on costa (where it encloses a small silvery spot) before middle, extends across extremity of cell to below first median nervule not far from anal angle, whence it is deflected at an acute angle to inner margin beyond middle; from base a straight rather narrow brown streak runs between median and submedian nervures, and meets the stripe just described before the point of deflection; in hind-marginal border, the upper four spots are enlarged and confluent into a wide silvery band, while the lower four are small, separate, tinged with bluish, and strongly black-edged: this whole series of spots is both preceded and followed by a silvery streak, of which the inner is edged internally with black, and the outer stained with ochreous-yellow in its lower half.

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[1] A similar sexual difference is observable in the Indian species *Bernardus*, Fab., and nearly allied forms, in which the tail on first median nervule is in both sexes much reduced, but smaller in the male; while that on the third nervule, always very small and acute in the male, is elongated and blunt in the female.

♀ *Like ♂, but with all the fuscous markings much reduced, especially the hind-marginal border*, in which the pale spots are greatly enlarged (with the exception of the apical spot of the fore-wing) and more or less confluent with the discal ground-colour; *hind-wing with an additional (shorter) tail on third median nervule.* UNDER SIDE as in ♂, but less silvery.

This delicately-coloured species frequents woods, and the few examples I noticed in Natal remained among the higher branches of trees, on which they frequently settled. Colonel Bowker, who met with the butterfly in Kaffraria Proper, noted that the ♀ was commoner than the ♂, and more easily captured, frequenting a yellow-flowered thistle near the banks of the Bashee River. The ♀ was also often to be taken flying up and down a valley among scattered trees or bushes, and at such times looked very like some of the commoner *Pieridæ*. *Zoolina's* season of appearance was the autumn, and Colonel Bowker did not notice it after the beginning of April.

Localities of *Charaxes Zoolina*.

I. South Africa.
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban.
  H. "Delagoa Bay."—Coll. Hewitson.

II. Other African Regions.
  A. South Tropical.
    a. Eastern Coast.—Zambesi.—Coll. Hewitson.

104. (2.) **Charaxes Neanthes**, (Hewitson).

♀ *Nymphalis Neanthes*, Hewits., Exot. Butt., i. p. 88, pl. 44, ff. 2, 3 (1854).
♂ ♀ „ „ Trim., Rhop. Afr. Aust., i. p. 179, n. 104 (1862).

Exp. al., (♂) 2 in. 2–5 lin.; (♀) 2 in. 4–7 lin.

♂ *Fulvous-ochreous, with ill-defined ferruginous brown hind-marginal borders*, the inner edge of which is expressed by a curved irregular series of small fuscous spots (lunulate and linear in hind-wing). *Fore-wing:* a narrow ferruginous-brown short transverse streak closing discoidal cell; apical and hind-marginal border beginning not far from end of cell, and enclosing an indistinct costal marking composed of two good-sized spots of the ground-colour, and a curved submarginal row of six still more indistinct similar spots, incompletely separated from the ground-colour of the disc by the series of fuscous spots above mentioned. *Hind-wing:* hind-marginal border very indistinct, containing traces of a median series of ground-colour spots, preceded and followed by a streak of the same hue; of these streaks the inner is wider and immediately preceded by the series of small fuscous lunulate spots, which is more irregular than in fore-wing; at anal angle an indistinct fuscous, blue-dusted lunulate mark, outwardly bounded by a greenish-yellow edging; tail (at end of first median nervule) ferruginous-brown. UNDER SIDE.—*Duller, more or less closely irrorated with ferruginous-brown;* discal series of spots represented by very small inconspicuous rounded spots; *a common, rather broad, dark ashy-grey streak, edged on its inner side with white*, from costa of fore-wing (at extremity of cell)—interrupted abruptly on fold between first median nervule and submedian nervure—to a little before anal angle of hind-wing; hind-marginal border of fore-wing, and all hind-wing except an inferior discal patch, with a submetallic gloss; no hind-marginal brown border. *Fore-wing:* costa, from base to extremity of cell, irrorated with hoary-grey; a minute, round, fuscous spot, ringed with hoary-grey, in discoidal cell. *Hind-wing:* hind-margin near and at anal angle, and tail, thinly irrorated with grey.

♀ *Rather paler, especially as regards hind-marginal borders;* spots of discal series usually darker and better defined. *Hind-wing:* anal-angular markings more distinct; sometimes two additional lunulate hind-marginal marks of the same description between third and first median nervules; an additional tail (shorter) at extremity of third median nervule. UNDER SIDE.—*Usually paler than in ♂, with the irroration coarser, not so close, and less evenly distributed;* gloss not so bright.

In both sexes the transverse streak of the under side is often indistinct, and is sometimes almost obsolete.

This insect is allied to *C. Betsimisaraka*, Lucas, but the latter has a white basal suffusion as in *Charaxes Varanes* (Cram.) Another small *Charaxes*, from Madagascar, which I saw in the fine collection of Mr. Henley G. Smith, but which I believe is unnamed, appeared to be a still nearer ally.

C. Neanthes, notwithstanding its widely different colouring, is closely related to *C. Zoolina* (Westw.) in every other respect, and appears to have quite similar habits and distribution. While in Natal I only saw two specimens,—one at Verulam and the other at Itongati River; each was among the branches of a tree, making short flights and returning to its perch. Colonel Bowker, who met with it not uncommonly in Kaffraria Proper, noted that it sometimes visited the ground, settling for a few minutes on grass or shrubs; in that part of South Africa he observed it in December and January, and again from April to August, finding it more numerous in May.

Localities of *Charaxes Neanthes*.

I. South Africa.
    D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
    E. Natal.
        a. Coast Districts.—D'Urban (*J. H. Bowker*). Verulam. Itongati.
    H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).

II. Other African Regions.
    A. South Tropical.
        a. Eastern Coast.—Zambesi River (*Rev. H. Rowley*).

105. (3.) **Charaxes Varanes**, (Cramer).

♂ *Papilio Varanes*, Cram., Pap. Exot., ii. t. clx. ff. D, E (1779); and (♀) iv. t. ccclxxxviii. ff. A, B (1782).
" " Dru., Ill. Nat. Hist., iii. pl. xxxi. (1782).

Nymphalis Varanes, Godt., Enc. Meth., ix. p. 364, n. 48 (1819).
Philognoma Varanes, Westw., Gen. D. Lep., ii. p. 311, n. 2 (1850).
„ „ Trim., Rhop. Afr. Aust., i. p. 181, n. 105 (1862).

Exp. al., 3 in. 2–9 lin.

Rich-ferruginous, spotted with warm orange-ochreous; basal portion of fore-wing pale-yellowish shading into orange-ochreous, of hind-wing, silky-white. Fore-wing: narrowly white on inner margin, gradually shading through dull-yellow into orange-ochreous, which latter colour occupies middle; three short, transverse, ferruginous marks on the ochreous portion,—one just beyond extremity of discoidal cell,—another between third and second median nervules, *below*, and slightly *beyond*, the first mark,—the third between second and first median nervules, vertically in a line with the first mark; outer half of wing dark-ferruginous, which colour commences abruptly just beyond the three marks described, indenting the orange-ochreous between median nervules; beyond middle, two transverse rows of orange-ochreous spots, the outer row parallel to hind-margin, the *inner* somewhat *sinuate*,—the spots of the *outer* row thinner and more lunular than those of the inner; neither row extending below submedian nervure, and *both* with the spot next costa often indistinct; between the two rows is another of *dark* spots, more apparent in ♀ (whose ground-colour is paler). *Hind-wing:* basal portion, to beyond extremity of discoidal cell, *glistening-white;* along submedian nervure, from base, a dense clothing of silky, white hair, not extending to anal angle; rest of wing ferruginous, inclining to ochreous near costa and next basal white; two rows of ochreous spots in *fore-wing* indistinctly continued in this wing, the row of dark spots distinctly so, diminishing in size from subcostal nervure as far as second or first median nervule; bordering hind-margin, a row of thin, dull-blue lunules, of which the three next anal angle are the most conspicuous, being *outwardly* very thinly white-edged; tail at extremity of third median nervule brownish-ferruginous, slightly widened at its tip, from two to three lines in length. UNDER SIDE.—*Very variable; dull greyish-brown, inclining to ferruginous, with pale-green nervures; outer portions of wings more or less glistening. Fore-wing:* crossing discoidal cell, three transverse, more or less distinct, strongly waved and angulated grey lines, sometimes defined with glistening-silvery outwardly, the third extending almost to submedian nervure; a little beyond cell, a fourth, similar, longer, interrupted line, about middle, also nearly reaching submedian nervure; beyond middle, a slightly-curved, transverse, continuous, dark-grey streak, *glistening-silvery externally*, from costa to below first median nervule; beyond this, the surface is more or less washed with glistening-silvery, which does not, however extend to hind-margin, except at apex and at anal angle; parallel to hind-margin, a row of more or less indistinct, dark-grey spots, from costal edge to submedian nervure. *Hind-wing:* before middle, three transverse, much-angulated, zigzag grey lines, similar to those in *fore-wing*,

—the two outer lines sometimes extending nearly to inner-margin; transverse streak of *fore-wing* continued completely across this wing, from costa beyond middle to inner margin immediately before anal angle; surface beyond streak much washed with glistening-silvery (usually *more so* than in *fore-wing*); an imperfect, greyish, ferruginous-ringed ocellus next streak, close to costa, and two similar, more imperfect ocelli, between anal angle and second median nervule; bordering hind-margin, a row of rather indistinct, glistening, greyish lunules.

Other variations of the under side often occur, notably one in which the ground-colour is olivaceous-yellow, with all the striation and markings strongly and conspicuously marked, and the ocellate sub-marginal spots more developed, and forming a complete or almost continuous series on both wings; and another (in the ♀) in which olivaceous-brown prevails, and the striation is rather indistinct, but the ocellate spots of hind-wing are well developed, and the silvery gloss is unusually bright, and there is in both wings a terminal cellular silvery patch.

The South-African examples differ from those I have examined from different parts of Tropical Africa in having the basal white of the fore-wing so much restricted. They are, however, variable in this particular, some females exhibiting a small inner-marginal white patch, extending as far as median nervure; but none that I have seen present nearly so much white as is found in specimens from Cape Coast Castle and Sierra Leone on the West Coast, or Quilimane and Zambesi on the East Coast, in which, in both sexes, the white largely invades the discoidal cell, and in the ♀ nearly fills it. In the hind-wing, also, the white in the Tropical examples is extended to a point considerably nearer anal angle.[1]

Larva.—Dull bluish-green above; pale whitish-green beneath, irrorated with very minute silvery dots. On 6th, 8th, and 10th segments, a pale-ochreous, somewhat crescentic, mark on the back,—that on the 10th segment very faint and only found in full-grown specimens. A thin, sinuated, silvery lateral stripe. Head flat, armed with four backward-sloping, recurved, somewhat serrated horns, bright turquoise-blue beneath, and in young specimens edged with reddish. Anal segment flattened, bifid. Feeds on a species of *Rhus* (probably *R. lævigata*).

Plate I. fig. 6.

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[1] The nearest known ally of *Varanes* is the very curious *Charaxes Balfouri*, Butler (*Proc. Zool. Soc. Lond.*, 1881, p. 176, pl. xviii. f. 6), from the island Socotra, which altogether wants the basal white suffusion, and has on the hind-wing an almost linear tail on third median nervule, and a very short tail on the first median nervule. The hind-marginal lunules of the hind-wing are developed into a continuous festooned border, black internally, blue mesially, and pure-white externally. The under side is very like the olivaceous variation of *Varanes* above noted, but the silvery-white transverse streak is enlarged into an angulated white stripe, and the hind-wing has a conspicuous series of broad white hind-marginal lunules. The hind-margin is throughout much more dentated than in *Varanes*, particularly in the hind-wing.

PUPA.—Pellucid blue-green with a delicate plum-like bloom. On each side of abdomen a row of six black dots. On anal pedicel two pairs of small yellowish tubercles, and a similar pair on ventral surface, close to pedicel, facing towards the head.

Mr. Mansel Weale, who sent me the notes and drawings from which the above description of the larva and pupa (found near King William's Town, Cape Colony) are drawn up, informed me that the chrysalis state lasted for fourteen days.

Colonel Bowker also reared *Varanes* in Natal, and in 1882 sent me a specimen with the skin of the pupa from which it had emerged. On this skin the tubercles on and near the tail described by Mr. Weale were very prominent and conspicuous, being tipped with black; it further presented two raised black spots, one on each side of the bluntly bifid head. This pupa was attached to the edge of a green leaf.

This very fine butterfly is common in the wooded parts of South Africa, and is very conspicuous on the wing. At rest, it is by no means easy to detect, its under-surface colouring being so like faded or withered leaves, and its accustomed seat being on the stems or among the branches. Its flight is not so rapid as that of several of its near allies, and it often descends to sport about low trees and even bushes. The exuding sap from wounds of trees is very attractive to it; and I once enticed a specimen by honey smeared on a trunk at Plettenberg Bay. The species seems to be out during every month of the year, but is numerous only during the warmer season.

Localities of *Charaxes Varanes.*

I. South Africa.

- B. Cape Colony.
  - *a.* Western Districts.—Knysna. Plettenberg Bay.
  - *b.* Eastern Districts.—"Van Staden's River, near Port Elizabeth."—*D'Urban.* Grahamstown. King William's Town (*W. D'Urban* and *J. H. Bowker*). East London (*P. Borcherds*).
- D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
- E. Natal.
  - *a.* Coast Districts.—D'Urban. "Umkomazi (Lower)."—J. H. Bowker.
  - *b.* Upper Districts.—Estcourt (*J. M. Hutchinson*).
- F. Zululand.—St. Lucia Bay (*Colonel H. Tower*).
- H. Delagoa Bay.—Lorenço Marques (*Mrs. Monteiro*).

II. Other African Regions.

- A. South Tropical.
  - *a.* Western Coast. "Angola (*J. J. Monteiro*)."—Druce.
  - *b.* Eastern Coast.—Zambesi River (*Rev. H. Rowley*). Quilimane (*J. H. Bowker*).
- B. North Tropical.
  - *a.* Western Coast.—Cape Coast Castle (*J. M. Pask*). Sierra Leone (*J. M. Pask*).
  - *b.* Eastern Coast.—"Abyssinia: Shoa (*Antinori*)."—Oberthür.

106. (4.) **Charaxes Jahlusa,** (Trimen.)

♀ *Nymphalis Jahlusa,* Trim., Rhop. Afr. Aust., i. p. 177, n. 102 (1862); and (♂) ii. pl. 3, f. 5 (1866).
Charaxes Argynnides, Westw., Proc. Ent. Soc. Lond., 1864, p. 10.

Exp. al., (♂) 1 in. 11 lin.—2 in. 2 lin.; (♀) 2 in. 5–7 lin.

♂ *Fulvous-ochreous, with black spots and hind-marginal border. Fore-wing:* in discoidal cell, a minute round spot in upper part near base, succeeded by a sinuate short transverse streak; at extremity of cell, an irregularly-quadrate marking; two rather small spots below median nervure; a discal transverse series of six spots (of which the upper three, near costa, are contiguous, and sometimes emit rays joining, or almost joining, disco-cellular terminal marking), curving inward to below first median nervule; a rather narrow hind-marginal border, marked externally with eight spots of the ground-colour, of which the first is linear and indistinct, the second to the fifth decreasingly lanceolate, and the others bluntly rounded, the last being much the largest; just before hind-marginal border, between costa and third median nervule, a row of four more or less suffused and contiguous spots, so connected with the border as to shut off four small spots of the ground-colour; the second of these enclosed spots is the largest, and paler than the rest (in one instance white); base and costa somewhat dusky. *Hind-wing:* paler towards costa, fading into whitish on costal edge,—the nervures there situate markedly green; on costa, about middle, an imperfect ring-spot (sometimes filled with black); occasionally three minute spots marking upper and outer edge of discoidal cell; hind-marginal border narrower than in fore-wing, and more broken along its inner edge, enclosing mesially a series of eight small lunulate spots of ground-colour, and externally a continuous lunulate streak of the same colour (commencing on first subcostal nervule, and marked with silvery-bluish at anal angle), leaving a linear but very well-defined black hind-marginal edging; tails narrow, acute,—the one on third shorter than that on first median nervule. UNDER SIDE.—*Hind-wing, and costal edging and apical area of fore-wing, pale olivaceous-grey, varied with brownish and with silvery markings. Fore-wing:* rest of area pale salmon-red; spots as on upper side, but smaller, more sharply defined, and thinly edged with silvery-white; two additional spots near base, one in cell and the other just above it on costa; spots of discal row (except the lowest) broadly bordered externally by silvery; hind-marginal border greyish-silvery,—its external spots (all faintly marked except the lowest) pale salmon-red, and the two lowest inwardly edged by conspicuous black lunulate marks; the streak before hind-marginal border much narrower than on upper side and prolonged to first median nervule,—the spots between it and border silvery, mixed with salmon-red in the lower ones. *Hind-wing:* before middle, between costal and submedian nervures, a transverse row of five silvery spots, black-edged on both sides, of which the uppermost is very much the largest; beyond middle a continuous, wide, submacular silvery band, with its very irregular inner edge interruptedly marked with black; inner-marginal area dull-silvery, with two small black spots before middle, and a black line (longitudinal) between submedian and internal nervures; three small black spots along costa before middle; hind-marginal border immediately preceded by a series of fuscous-edged lunulate spots, of which the second (largest, between subcostal nervules) and fifth are silvery, and the rest salmon-red; border itself greyish-silvery, its contained spots creamy-white tinged with ochreous-yellow, and ringed (near anal angle very distinctly) with black enclosing a very thin line of bluish-silvery; indenting silvery discal band externally, a series of inter-nervular thin brown rays.

♀ *Similar, but paler and duller; the outer markings fuscous; spots in hind-marginal border larger. Hind-wing:* an irregular transverse row of seven spots (sublinear except the subannular large spot on costa) extending to below first median nervule. UNDER SIDE.—As in ♂, but paler throughout.

Head tawny above, with four white spots; palpi tawny above, black laterally, white below,—the terminal joint black throughout. *Thorax* tawny above; collar with a white spot on each side; below, brown with a broad white breast-stripe (longitudinal), and seven or eight different-sized white spots on each side; legs whitish. *Abdomen* tawny above; below with a creamy dark-bordered stripe down the middle.

A ♂ specimen from the Zambesi, in the South-African Museum, has the ground-colour darker on both upper and under surfaces, and the silvery band beyond middle of hind-wing much narrower and more macular. (It was on a Zambesi specimen that Professor Westwood founded his *Charaxes Argynnides.*)

Until Colonel Bowker found this curious little *Charaxes* in Kaffraria in the year 1862, the only specimen known to me was one presented to the British Museum by Sir Andrew Smith. Mrs. Barber also sent the butterfly from Highlands, near Grahamstown; and in 1870 I had the pleasure, with her, of observing it in some numbers at a spot a few miles from Highlands. On the Bashee River Colonel Bowker noted *Jahlusa* as rare, and keeping constantly to particular trees, whence it would chase away other butterflies. Both at Uitenhage and at Zwaartwater's Poort I found that *Jahlusa* delighted to settle on the stems and twigs of the "Spekboom" (*Portulacaria afra*), but did not avoid those of other trees, and sometimes visited twigs of mere bushes. At the latter locality they also continually settled on a low, rough-leaved *Solanum* with dull-purple flowers, sucking at an exudation on its stems and (in one instance) at its flowers.[1] When thus engaged they were well hidden, the leaves of the *Solanum* being broad and lying horizontally towards the summit of the plant; and when settled on the white bark of the trees (especially on the glossy-white of the Spekboom), their silvery under side rendered them very inconspicuous. On the wing the species most resembles *Atella Phalantha*. Its flight, even in the case of the ♂, is very slow for a *Charaxes*, and more like that of *Pyrameis Cardui*. It was in February that I made these observations; and during the same month Mr. F. Barber, who found the species numerous in the Fish River Bush, noticed that it kept about a species of *Celastrus*, but saw one example, just out of the pupa, resting on a Spekboom with its wings hanging downward.

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[1] As will be seen elsewhere, the Marquis Antinori in Abyssinia noted the same habit in *Ch. Candiope* (Godt.)

Localities of *Charaxes Jahlusa.*

- I. South Africa.
  - B. Cape Colony.
    - *b.* Eastern Districts.—Uitenhage. Grahamstown: Highlands (*Mrs. Barber*); Zwaartwater's Poort.
  - D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
- II. Other African Regions.
  - A. South Tropical.
    - *b.* Eastern Coast.—Zambesi River (*Rev. H. Rowley*).
    - *b*1. Interior.—Tati River (*F. C. Selous*).

107. (5.) **Charaxes Candiope,** (Godart).

PLATE VI. fig. 4 (♂).

Nymphalis Candiope, Godt., Enc. Meth., ix. p. 353, n. 10 (1819).
Charaxes viridicostatus, Auriv., K. Sv. Vet.-Akad. Förhandl., 1879, p. 41, n. 8.

Exp. al., 3 in. 7–9 lin.

Fulvous, inclining to ferruginous; a basal space (much wider in fore-wing) pale-yellow, with the nervures crossing it bright pale-green; area beyond middle dark-brown, marked with a submarginal row of very distinct fulvous spots and a hind-marginal row of fulvous lunulate spots (in hind-wing forming a continuous border). Fore-wing: costal edge bright pale-green like the nervures; basal yellow extending to a little before middle, where it fades into the fulvous; from subcostal nervure at extremity of discoidal cell an irregular outwardly-dentate dark-brown streak, narrowing downward, interrupted on third and second median nervules, and ending a little below the latter nervule; a little beyond this streak, a subcostal irregularly quadrate dark-brown marking, touching dark-brown of outer area on lower radial nervule, and so isolating a rather larger fulvous marking immediately succeeding it; seven well-defined rounded spots in submarginal row (which is curved superiorly), increasing in size downward; lunulate hind-marginal spots also increasing downward, but mostly ill-defined (except the lowest), and partly confluent. *Hind-wing:* basal yellow very limited inferiorly, only extending into upper part of discoidal cell,—the costal and subcostal nervures bright pale-green; inner-marginal and lower discal area ferruginous-fulvous; dark-brown of outer area narrowing downward to first median nervule, where it ends; its six fulvous spots decreasing and narrowing downward, the lowest being almost linear; a subocellate marking at anal angle, consisting of two lunulate black spots, bordered internally by pale-bluish and an indistinct whitish fulvous line, and externally by dull-greenish; two tails ferruginous-fulvous,—that on first median nervule in both sexes long, rather wide, somewhat spatulate at the tip, and curving upward towards apex,—while that on third median nervule is in the ♂ short, straight, and acuminate, but in the ♀ of the same form as the other tail, only straight instead of curved; cilia whitish. UNDER SIDE.—*Hind-wing and apical hind-marginal area of fore-wing pale soft yellowish-brown (sometimes inclining to ferruginous), towards hind-margin with a surface-gloss of violaceous-whitish; neuration throughout bright-green. Fore-wing:* space between costa and costal nervure green, transversely striated with fine white lines; basal area pale-yellowish; in discoidal cell, a basal blackish spot and three widely-separated thin blackish streaks (of which the outermost is prolonged below the cell); at extremity of cell, a short, irregular, brownish-ferruginous fascia, externally bounded by a blackish line, ending between second and first median nervules; a curved discal transverse ferruginous-brown fascia from costa to inner margin, becoming blackish-violaceous in its lower portion, which is also edged with black externally; an indistinct pale submarginal lunulate band, inwardly bounded by dusky spots, of which only the two lowest are well-defined and subocellate with bluish. *Hind-wing:* before middle, an irregular ferruginous-brown fascia, thinly black-edged and more or less completely white-bordered on both sides; a narrow, discal, strongly lunulated ferruginous-brown (inwardly yellow-edged) stripe from costa to anal angle; a more or less indistinct series of submarginal whitish spots, and another of hind-marginal whitish lunules; between these series one of small black violaceous-scaled spots (surrounded by greenish irroration), only distinct between radial nervule and anal angle; at base, between costa and subcostal nervure, a smooth greenish space almost bare of scales.

There is much variation in the distinctness of the under-side markings, which are sometimes obscured by a pale-ferruginous suffusion and sometimes by the extension of the violaceous-whitish gloss.

The sexes do not differ except in the form and size of the superior tail of the hind-wing, and in the rather paler colouring of the ♀.

This species bears considerable resemblance to *C. Varanes*, (Cram.), but is readily recognised by the absence of white at the base of the hind-wing, the conspicuous green of the nervures, and the presence of two tails, instead of one only, on the hind-wing; the under-side pattern is also widely different.[1]

I did not meet with *Candiope* during my stay in Natal, but Mr. W. Morant and Colonel Bowker have both found it not rarely at Pinetown and D'Urban respectively. The first South-African specimen I received was from the late Colonel H. Tower, who took it at St. Lucia Bay in 1867. Colonel Bowker's examples were captured in August 1878; but Mr. Morant informed me that he had seen the species on the wing during the greater part of the year. Oberthür publishes (*Ann. Mus. Civ. Genova*, xv., 1880, p. 166) a note by the Marquis Antinori that he found this butterfly in Abyssinia to feed chiefly on an exudation from two sorts of Solanaceous plants.

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[1] There is a very near ally of *Candiope* in Madagascar, in which the neuration is much less green; the basal yellow duller, as well as the spots of the fore-wing; and the dark outer area of the fore-wing extending quite up to the extremity of the cell; while, on the under side, the striæ in basal area are very well marked and edged with white.

Localities of *Charaxes Candiope.*

I. South Africa.
  E. Natal.
    a. Coast Districts. — D'Urban (*J. H. Bowker*). Pinetown (*W. Morant*).
  F. Zululand.—St. Lucia Bay (*H. Tower*).
  H. Delagoa Bay.—Coll. Godman.
  K. Transvaal.—Limpopo River (*F. C. Selous*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—Damaraland (*J. A. Bell*). "Angola (*J. J. Monteiro*)."—Druce. Congo.—Coll. Brit. Mus. "Chinchoxo (*Falkenstein*)."—Dewitz.
  B. North Tropical.
    a. Western Coast.—Sierra Leone.—Coll. Brit. Mus.
    b. Eastern Coast.—" Abyssinia : Shoa (*Antinori*)."—Oberthür.

108. (6.) **Charaxes Druceanus,** Butler.

♂ *Charaxes Druceanus*, Butl., Cist. Ent., i. p. 4, n. 1 (1869); and Lep. Exot., i. pl. 10, f. 4 (1870).
♂ *Charaxes Cinadon*, Hewits., Ent. M. Mag., vi. p. 177 (1870).
♂ *Charaxes Druceanus*, Westw., Thes. Ent. Oxon., p. 182, pl. 34, f. 6 (1874).

Exp. al., (♂) 3 in.—3 in. 4 lin.; (♀) 3 in. 8½ lin.

♂ *Fuscous, suffused with ferruginous in basal area ; a common discal deep-fulvous band and hind-marginal lunulate border, the latter in fore-wing broken regularly into seven spots, but in hind-wing continuous. Fore-wing :* ferruginous extends in costal area to beyond extremity of discoidal cell (where it tinges two short transverse fulvous fasciæ that converge and join the fulvous discal band above third median nervule), and in inner-marginal area as far as inner edge of discal band ; this band, beginning narrowly close to costa near apex, widens as far as inner margin; lowest hind-marginal spot large, double ; near end of discoidal cell an elongate black spot, before which is an indistinct very small blackish spot. *Hind-wing :* inner-marginal area suffused with greyish-brown, and edged narrowly with ochreous-yellow discal band narrowing downward, ferruginous on its outer edge and over its lower portion, becoming obsolete about first median nervule ; lunulate hind-marginal border narrowly black-edged outwardly, its anal-angular extremity tinged with greenish ; a little before border, between third median nervule and submedian nervure, three small blue spots, the lowest geminate,—the first and second sometimes obsolete ; tails acuminate, narrow, rather short,—that on third median nervule straight,—that on first median nervule somewhat longer and slightly curved upward; cilia white. UNDER SIDE.—*Ferruginous; the common discal band, and a narrow transverse band before middle of hind-wing, bright-silvery. Fore-wing:* from base to middle a silvery streak between costa and costal nervule; three greenish-fuscous, on both sides silvery-edged, transverse marks in discoidal cell, the third prolonged below cell to first median nervule; a similar marking at extremity of cell; faint greenish-black traces in bifurcations of silvery band, and three spots of the same colour (the lowest much enlarged and centred with whitish) along inner edge of band; a submarginal series of seven fuscous, outwardly dull-silvery-edged, lunulate spots, of which the two lowest are greatly enlarged. *Hind-wing:* silvery discal band broad on costa (where it is marked with a small ferruginous spot), and extending to inner margin (where it is very narrow); along inner edge of band, from second subcostal nervule downward, an interrupted irregular greenish-fuscous streak; narrow silvery band before middle unmarked above discoidal cell, but there containing a greenish-fuscous middle streak, and thence (much narrower) deflected longitudinally to a point below first median nervule beyond middle, where it is joined by a similar fuscous-marked narrow stripe crossing discoidal cell near extremity; the inner-marginal area marked by three longitudinal similar stripes from near base, uniting at their extremities, and the first and second of them meeting end of discal band a little before anal angle; a submarginal row of fuscous lunules, dull-silvery-edged on both sides, preceded by a similar more irregular series, only silvery-edged externally; near anal angle the two series approximate, and form two black-ringed ocellate markings, irrorated with greenish and bluish, and centred with silvery; on costa, close to base, a narrow, oblique, silvery-ringed greenish-fuscous marking.

♀ *Paler, especially the common discal band, which is very pale ochre-yellow inclining to cream-colour, edged narrowly with ferruginous.* UNDER SIDE.—As in ♂, but the silvery of the submarginal markings much enlarged.

C. Druceanus is allied to both *C. Eudoxus* (Drury) and *C. Cynthia*, Butler; on the upper side more resembling the latter, and on the under side the former. Its under side, on the whole, however, is closer to that of *C. Brutus* (Cram.) It differs from *Cynthia* on the *upper side* (in fore-wing) in the width, continuity, and inferior confluence with the discal band of the two short costal fasciæ; in the discal band commencing close to costal margin; in the better marked and more separated hind-marginal spots; and in possessing a quadrate black spot in discoidal cell not far from the extremity; while (in hind-wing) the hind-marginal border is narrower and more distinctly lunulate, and outwardly bounded throughout by a well-marked black edging. From *Eudoxus* it differs on the *upper side* in having the discal band not nearly so sharply defined and not dentated on the nervures, especially as regards the hind-wing (on which the tails are longer and narrower); and, in the fore-wing, in the possession of the cellular black marks and the costal short fulvous fasciæ. On the *under side*, the markings before the discal band correspond pretty nearly to those of *Eudoxus*, but are less irregular, and with broader silvery (instead of creamy-white) edges; in the fore-wing the discal band is silvery and continuous, instead of fulvous-ochreous and macular, and there is a costal silvery streak; and in the *hind-wing* the discal band is much broader, and wants three of the four ferruginous spots which mark its upper half in *Eudoxus*. Compared with *C. Brutus*, the *under side* has the submarginal markings not sagittate; and (in the hind-wing) the dark spots that mark the upper half of the inner side of the discal band are wanting; while the stripe before middle is straight and continuous, and unmarked above the cell, instead of being (as in *Brutus*) composed of two distinct greyish-fuscous white-edged elongate marks out of line with each other. All the silvery pattern is far more brilliant than in *Brutus*.

I first saw this very beautiful *Charaxes* in 1867 at the Hopeian Museum at Oxford, in a collection made on the Zambesi by the Rev. H. Rowley. In 1869 Mr. W. Morant sent me a ♂ from Natal, with a note that it was not uncommon, but local, and had been observed from February to May at Pinetown. Colonel Bowker, ten years subsequently, met with the butterfly in the same locality, and sent me the paired sexes, taken on the 5th April 1879. Besides the ♀ of this pair (which is that above described), I have seen only one other example of that sex, in a collection brought by a lady from Natal in 1883. A ♂ from Pinetown, sent by Colonel Bowker in July 1879, and two ♂s from the Eastern Transvaal, taken by Mr. Ayres, are all the other South-African specimens I have seen.

Localities of *Charaxes Druceanus*.

I. South Africa.
  E. Natal.
    a. Coast Districts.—Pinetown (*W. Morant* and *J. H. Bowker*).
  K. Transvaal.—Lydenburg District (*T. Ayres*).
II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola (*Pogge*)."—Dewitz.
    b. Eastern Coast.—Zambesi (*Rev. H. Rowley*).
  B. North Tropical.
    a. Western Coast.—"Old Calabar."—Butler.

109. (7.) **Charaxes Pelias**, (Cramer).

♂ *Papilio Pelias*, Cram., Pap. Exot., i. t. iii. ff. C, D. (1779).
Nymphalis Pelias, Godt., Enc. Meth., ix. p. 351, n. 2 (1819).
,, ,, Trim., Rhop. Afr. Aust., i. p. 175, n. 101 [part] (1862); and ii. p. 340 [part] (1866).
♀ *Charaxes Pelias*, Butl., Lep. Exot., p. 25, pl. x. f. 5 (1869).

Exp. al., 2 in. 11 lin.—3 in. 4 lin.

♂ *Fuscous, suffused with dull-ferruginous in basal area; a common discal yellow-ochreous band, and also a hind-marginal series of yellow-*

ochreous spots. Fore-wing: ferruginous extends costally to beyond middle, occupying discoidal cell, and inner-marginally as far as inner edge of discal band; a fuscous mark at extremity of cell,—another (smaller) in cell towards extremity,—and a third, very indistinct and small, in cell not far from base; discal band broad, its inner edge indented on nervules,—very deeply so on second radial, its outer edge regularly serrated by deep nervular indentations; outer portion of band traversed by a series of six contiguous sub-lunulate black spots from close to costa as far as first median nervule,—a seventh separate minute spot below the nervule; spots on hind-margin eight, very distinct, well separated, the lowest geminate. *Hind-wing:* discal band narrowing on median nervules and becoming obsolete on the first; hind-marginal spots seven, a little before hind-margin itself (which is black-edged), lunulate (especially the three lowest, which are more or less suffused with white), the last tinged with greenish; inner-marginal area grey, with a whitish mark just before anal angle, indicating end of discal band; between third median nervule and submedian nervure a submarginal row of three small bluish spots, the lowest lunulate; tails short, narrow, black, that on third median nervule a good deal shorter than the other, and straight, the other slightly curved upward; cilia white. UNDER SIDE.—*Basal area dark-ferruginous, closely marked with shining-grey, fuscous-edged, white-bordered spots and striæ; discal band white, shining; outer area shining pale-grey. Fore-wing:* a shining white streak from base between costa and costal nervure; in discoidal cell a small basal, a larger oval, and an elongate outer marking, the latter irregularly prolonged below cell as far as first median nervule; at extremity of cell a similar but shorter marking; bounding inner edge of band a very irregular macular stria of the same colours, ending in a basal inner-marginal grey space above submedian nervure; series of fuscous spots traversing band conspicuous against the white, the serrated outer portion of the band beyond them of a paler brighter yellow than on upper side, and more macular, and immediately followed by a series of fuscous spots, all faint and very small except the lowest, which is large and geminate; hind-marginal spots much less distinct and of a paler brighter yellow than on upper side. *Hind-wing:* a curved elongate oblique mark on costa at base, and just beyond it a very strongly recurved mark, interrupted on costal, but extending to subcostal nervure; white discal band inwardly bounded by a long submacular stria, interrupted, and emitting a short separate outward-curving thin spot just below first median nervule on the white; in discoidal cell commence two long striæ, which thence run longitudinally above submedian nervure, and of which the inferior joins two similar striæ from near base along inner margin at their extremities, at the end of streak bounding white discal band; the band itself extends quite to inner-marginal edge, and is there widened; it is marked with a fuscous lunule externally just below radial nervule, and outwardly bounded by a series of short sub-sagittate contiguous dark-ferruginous marks, and (close to anal angle) by a black curved line; the hind-marginal yellow lunulate spots are surrounded by bluish-white, preceded by a series of blue-black thin lunules, only conspicuous near anal angle; between end of white band and anal angle a space is greenish-tinged and sub-ocellate, bounded internally by a pale-yellow lunule.

♀ *Duller and paler throughout, especially as regards the common discal band, the hind-marginal spots, and the basal dark-ferruginous. Fore-wing:* spots traversing discal band larger, more suffused. *Hind-wing:* discal band extending narrowly and obscurely to inner margin; submarginal bluish spots larger,—a small additional one above third median nervule. UNDER SIDE.—As in ♂, but the markings generally somewhat fainter.

The ♀ figured by Mr. Butler (*loc. cit.*) shows the under side markings as brighter and stronger than in the ♂; especially well marked are the fuscous spots bounding externally the discal band in the fore-wing, and even more enlarged are the dark-ferruginous acuminate markings bounding it in the hind-wing. This may very probably be the normal appearance of the ♀, as I have only received one example of that sex.

C. Pelias is in the upper-side colouring and pattern not unlike *C. Druceanus*, Butl., though everywhere paler, and with only the basal area suffused with ferruginous; but on the under side is at once separated by its very much duller markings (scarcely silvery anywhere), and greyish (instead of ferruginous and fulvous) hind-marginal area.

This is the only South-African *Charaxes* known to inhabit the open mountainous western tracts of the Cape Colony. Specimens have reached me from Genadendal[1] (Rev. G. Hettarsch) and Montagu (Mr. L. Taats), and I noticed it in Bain's Kloof in January 1876. Having heard from Dr. D. R. Kannemeyer that the species occurred abundantly at Montagu, I visited that locality in January 1876, but did not succeed in taking any examples, although I saw four during my two days' stay. I found that, as my correspondent reported, the butterfly haunted the "Wagenboom" (*Protea grandiflora*), sitting close until accidentally disturbed, when it darted away with great rapidity, and would settle on some distant bush of the Wagenboom—not returning to its former station, as is the habit of many species of *Charaxes*. Dr. Kannemeyer, however, who had a very much more intimate acquaintance with *Pelias* than I enjoyed, noted that it commonly showed a preference for some particular twig, generally a withered one; it was most prevalent at the end of November and beginning of December. Mr. Taats took it, in the same locality, "flying about willows, February." I think it very probable that the larva feeds on the Wagenboom, and that the butterfly will be found all through the mountainous country where that fine shrub or small tree prevails.

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[1] I was much interested at finding an example of this butterfly, labelled "Genadendal," among the remains of the Burchell Collection, preserved in the Hopeian Museum at Oxford.

Localities of *Charaxes Pelias.*

- I. South Africa.
  - B. Cape Colony.
    - *a.* Western Districts.—Bain's Kloof; Worcester side. Genadendal (*G. Hettarsch*). Montagu (*L. Taats* and *D. Kannemeyer*).

110. (8.) **Charaxes Saturnus,** Butler.

♂ *Charaxes Saturnus,* Butl., Proc. Zool. Soc. Lond., 1865, p. 624, pl. 36, f. 1; and (♀) Lep. Exot., p. 5, pl. ii. f. 2 (1869).
Nymphalis Pelias, Trim., Rhop. Afr. Aust., i. p. 175, n. 101 [part] (1862); and ii. p. 340 [part] (1866).

Exp. al., 3 in. 4–7 lin.

♂ *Fuscous, suffused with ferruginous-ochreous in basal area; a common discal warm yellow-ochreous band, and also a hind-marginal series of yellow-ochreous spots. Fore-wing:* quite as in *Pelias,* Cram., but considerably prolonged in apical portion; outer part of discal band, beyond traversing series of black spots, consisting of more elongate marks; lower part of band rather narrowed. *Hind-wing:* as in *Pelias,* but the transverse band paler and narrower, with its lower portion more completely obscured; bluish spots near hind-margin much larger; hind-marginal lunulate spots more generally suffused with white,—in the lower ones mixed with greenish; tail on first median considerably longer than in *Pelias.* UNDER SIDE.—*Very like that of Pelias, but generally brighter and clearer,—especially the ferruginous-red of basal area; outer area with a distinctly bluish tint in fore-wing and greenish tint in hind-wing. Fore-wing:* two series of ochreous-yellow spots larger and brighter than in *Pelias,*—the black spots outwardly touching the inner series much more strongly marked. *Hind-wing:* outer costal mark distinctly divided into two; discal white band much narrower on inner-margin, and without the small curved fuscous mark below first median nervule; *series of ferruginous markings externally bounding white band much enlarged, prolonged, and acuminate, and followed by an interrupted, sharply and regularly angulated, fuscous streak;* submarginal lunules with their bluish internal edging expanded into violaceous markings, which become large and round towards anal angle; hind-marginal yellow and white lunules larger and brighter.

♀ Like ♂, but paler and duller on both surfaces.

The ♀ figured by Mr. Butler (*loc. cit.*) is of very great size, expanding five inches across the wings, and is closer to the ♂ in colouring than are the two smaller ♀s (from Damaraland and the Transvaal) which I have received.[1] Mr. Butler's example was sent from the Congo; and it would be of interest to know if a correspondingly large form of the ♂ occurs there.

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[1] A brightly coloured ♀ since received from Colonel Bowker (Pinetown, Natal) expands 4 inches 1 line. Its fore-wings are considerably more acuminate than those of the specimen figured by Mr. Butler.

Although *C. Saturnus* is so very near an ally of *C. Pelias* (Cram.) that I did not think it separable up to 1866, it may be always recognised by its larger size and longer wings, as well as by the very much enlarged and acuminate ferruginous discal marks on the under side of the hind-wings. In my description are mentioned several other points of difference which appear to be constant.

This species seems to have a much wider range than *C. Pelias*, being recorded from as far north as Chinchoxo on the West Coast, and the Zambesi on the East Coast, while in the interior a specimen has occurred at the Victoria Nyanza (*Ann. and Mag. Nat. Hist.*, xii. p. 101, August 1883). In Damaraland, where Mr. J. A. Bell found it rather abundant, the butterfly was commonly found on the droppings of the larger animals. In Natal it would appear to be rare, Colonel Bowker having sent me only an example (belonging to Mr. B. Ayres), which was taken on an orange-tree at Pinetown, and another ♂ captured at the same place in April 1883.

Localities of *Charaxes Saturnus.*

I. South Africa.
  E. Natal.
    a. Coast Districts.—Pinetown (*B. Ayres*).
  K. Transvaal.—Potchefstroom District (*T. Ayres*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—Damaraland (*H. Hutchinson*, *C. J. Andersson*, and *J. A. Bell*). "Angola (*J. J. Monteiro*)."—Druce. "Congo."—Butler. "Chinchoxo (Falkenstein)."—Dewitz.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*).
    *b*1. Interior.—Bamangwato, Khama's County (*H. Barber*). Bulawayo (*F. C. Selous*). Mashunaland (*F. C. Selous*). "Victoria Nyanza (*Rev. J. Hannington*)."—Butler.

111. (9.) **Charaxes Brutus,** (Cramer).

♀? *Papilio Brutus*, Cram., Pap. Exot., iii. t. ccxli. ff. E, F (1782).
Papilio Cajus, Herbst., Nat. Bek. Ins., Schmett., iv. t. 64, ff. 1, 2 (1790).
Nymphalis Brutius, Godt., Enc. Meth., ix. p. 351, n. 3 (1819).
Nymphalis Brutus, Trim., Rhop. Afr. Aust., i. p. 173, n. 100 (1862).
Var. *Charaxes Brutus*, Cram., var. *Junius*, Oberth., Ann. Mus. Genov., xv. p. 166 (1880).

Exp. al., (♂) 2 in. 10 lin.—3 in. 6 lin.; (♀) 3 in. 8 lin.—4 in.

♂ *Brownish-black, with a gradually-widening, yellowish-white, narrowly bluish-edged band, beyond middle, from costa of fore-wing to near inner margin of hind-wing. Fore-wing:* a greenish gloss over basal portion; the first five spots of the transverse yellowish-white band, which commences not far from apex, distinctly separate from each other,—the remainder confluent as far as inner margin, where the band is widest; along hind-margin, between nervules, a row of small reddish-ochreous spots. *Hind-wing:* the transverse band prolonged across this wing, as a broad, continuous, median band, as far as submedian nervure; along hind-marginal edge, a row of narrow bluish, or greenish lunules, sometimes yellow-tinged, always more or less obliterated towards costa, and sometimes quite *obsolete*, except two or three imperfect lunules near anal angle; a little before these lunules is a row of pale-blue spots, of which only two large ones at anal angle are usually visible; tails on third and first median nervules slender, rather long, black, the *former* the longer of the two. UNDER SIDE.—*Rich chocolate-red, with numerous white margined, metallic-centred, blackish transverse striæ and spots; the transverse white band very conspicuous, glistening, continuous throughout. Fore-wing:* five of the white-margined striæ described on costa,—three in discoidal cell, one at its extremity, and one beyond middle, its lower end touching transverse white band; three similar striæ *below* cell,—one immediately beneath the third stria in cell, the other two (whose outer white edging is merged in transverse band) situate one above, the other below, second median nervule; two faint-blackish marks in transverse, glistening-white band, close to costa; beyond white band, the ground-colour is more *ochreous* in tint, and marked with a transverse row of triangular, or sub-triangular, blackish marks, outwardly edged with glistening-whitish (except the two last and largest, below first median nervule, which are contiguous, and edged outwardly with greyish-blue); on hind-margin, a greyish mark at extremity of each nervule, and a yellowish tinge *between* nervules; before transverse white band, and touching it, beneath third median nervule, a large, somewhat quadrate, blackish spot, *not* with a metallic centre; the space between it and base *dull ochreous. Hind-wing:* at base, on costa, an elongate spot, coloured similarly to striæ in *fore-wing*, and like them margined with glistening white; inner-marginal edge bordered with a black, *inwardly* white-margined streak near base, where its outline is most strongly convex; obliquely crossing the *deeply-grooved portion* of wing are three elongate glistening striæ, like those above described, white-margined on both sides, the second and third united by a curve at their lower and outer extremity (where, close to inner margin, they meet the broad transverse white band),—and the third likewise united, by a curve in the opposite direction from the same extremity, to a similar elongate streak lying in the fold where the swelling of the side of the *groove* commences; this latter streak seems continuous of a transverse row of three short, similarly coloured, contiguous marks from costa, which it meets on median nervure, very little removed from base; near end of cell is a similar, curved streak, which is continued *downwards and outwards* by a further streak of the same colours, that, touching the streak lying in the fold of wing, suddenly curves *upward* at its extremity, where it meets white transverse band; broad, transverse white band *more glistening* than that in *fore-wing*, more sharply defined than on *upper side*, continued conspicuously to *inner-marginal edge*, a little before anal angle, edged *inwardly* by a row of metallic-centred, small spots of variable size (the outer portion of whose white margins is merged with the band itself) as far as first median nervule,—and *outwardly* by an ill-defined, blackish streak, which always becomes obsolete towards costa, about second subcostal nervule; beyond band, two transverse rows of dull-blackish, sublunular marks, edged, the first *exteriorly*, the second *interiorly*, with metallic glistening-whitish, thin rays of which, between nervules, in some places unite the two rows; between second and first median nervules, these two rows unite *almost wholly*, forming a large, imperfect, steely ocellus, black-ringed, and with a pale-blue pupil in its outer half; a similarly coloured, but larger, and perfect ocellus, bipupillate with blue, succeeds at anal angle; around it, and bordering hind-margin, for the greater part, is a yellow-ochreous space; hind-margin narrowly bordered with a black edging, which is very thinly edged with *whitish* inwardly and outwardly.

♀ *Like ♂, but somewhat duller and paler* (the fore-wing with a brownish tinge); *common transverse white band considerably broader in hind-wing and near inner margin of fore-wing;* hind-marginal lunules of hind-wing whitish. UNDER SIDE.—As in ♂, but the common white band broader, and the markings beyond it not so distinct.

The variety which M. Oberthür has named *C. Junius* appears to be proper to Abyssinia. I have not seen it; but its distinguishing feature is in the colour of the common transverse band, which is stated to be pale-yellow instead of white.

LARVA.—Bright yellow-green (covered with minute yellow granules); second and last segments of a much duller green than the others. On each side of back a row of cuneiform yellowish marks, broad anteriorly, and deflected upward and posteriorly, narrowing to a point before hind-edge of the segment. On seventh segment a yellow-circular dorsal marking with a brown centre. Head light-green; the frontal horns short and tipped with cobalt-blue,—the two outer horns shorter than the two middle ones; mandibles light-blue tipped with black. (W. D. Gooch, M.S. description and outline drawing of Natalian larva, 1874.)

Captain H. C. Harford, who also observed the larva in Natal, saw the ova deposited on the leaves of the Seringa (*Melia azedarach*), and noted that they were at first pale-yellow, but became in a few hours reddish-brown. From an egg that was watched on a leaf out of doors the larva was hatched on the eighth day after its deposit. It was brownish-green, with the head and horns brown, and the caudal processes very long and curved inward. After the first moult, it was dark olive-green, with a slight indication of a pale spot on the back of the seventh segment; the head being of a darker brown, but the horns lighter at the tip; while the anal processes were light ashy-grey. After the second moult, it became dark-green minutely irrorated with white, and showed the whitish spot on the seventh segment much more distinctly; the head was larger in proportion to the body, and presented an ochreous line running along the sides and along outer edge of the horns. After the third moult, it remained of the same dark-green, but the white dorsal spot was circled with light-blue. (This larva does not appear to have been described by Captain Harford in its final stage.)

PUPA.—Bright-green; spiracles reddish-brown ringed with white, diminishing in size towards last segment; projections of head tipped with white; some confluent white spots on wing-covers. Head rather acutely bifid; thorax very convex; wings forming slight lateral projections; abdomen making a great angle at the segment in a line with apex of wing-covers, the last segment prolonged into a pedicel bearing four tubercles. (H. C. Harford, MS. notes on Natalian pupa, 1869.)

The white band towards costa of fore-wing becoming so attenuated and markedly macular, on the upper side, readily distinguishes *Brutus* from its South-African congeners; while the under side is in colouring and pattern intermediate to a great extent between those of *Druceanus* and *Saturnus*.

I frequently met with this fine *Charaxes* at Port Natal, and managed to capture a good many specimens at the "sucking-places" (on stems or branches of trees where moisture exuded) so specially attractive to butterflies of this group. On the wing, *Brutus* is one of the very swiftest of Nymphalidæ, and it is difficult to follow its flight, except when it is chasing another of its species or some competitor at the drinking stations mentioned. I noted examples in February, March, and April, and Colonel Bowker took several in August in the same locality; while in Kaffraria he had noticed the butterfly's occurrence in March, May, and June.

Localities of *Charaxes Brutus*.

I. South Africa.
  D. Kaffraria Proper.—Bashee River (*J. H. Bowker*).
  E. Natal.
    a. Coast Districts.—D'Urban. "Lower Umkomazi."—J. H. Bowker.
II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola (*J. J. Monteiro*)."—Druce.
    b. Eastern Coast.—Zambesi River (*Rev. H. Rowley*).
  B. North Tropical.
    a. Western Coast.—Fernando Po (*E. Bourke*). Sierra Leone.—Coll. Brit. Mus.
    b. Eastern Coast.—"Abyssinia, Shoa (*Antinori*)."—Oberthür [Var. *Junius*, Oberth.]

112. (10.) **Charaxes Castor**, (Cramer).

♂ *Papilio Castor*, Cram., Pap. Exot., i. t. xxxvii. ff. C, D (1779).
Papilio Pollux, Fab., Ent. Syst., iii. 1, p. 63, n. 197 (1793).
Nymphalis Pollux, Godt., Enc. Meth., ix. p. 352, n. 5 (1819).
Charaxes Pollux, Feisth., Ann. Soc. Ent. Fr., viii. p. 255, pl. 9, f. 1 (1850).

Exp. al., (♀) 4 in. 5 lin. [♂, apud fig. Cram., 4 in.]

♀ *Fuscous, with a tinge of bronze (greyish in hind-wing) near bases; a common transverse pale ochre-yellowish band. Fore-wing:* a dark spot in cell towards extremity is just apparent, being bounded on each side by a little vague yellowish irroration; discal band as in *Pelias* and *Saturnus,* but the series of fuscous spots traversing it more strongly marked and the outer part of band more completely separated into spots,—the latter much more rounded; a hind-marginal series of very small and ill-defined pale-yellowish inter-nervular marks; cilia marked rather conspicuously with white where these spots adjoin it. *Hind-wing:* band whitish near costa, its form and direction as in *Saturnus;* inner-marginal area greyish-brown; hind-marginal lunules very distinctly marked, more elongate than in *Saturnus,* but similarly coloured with white and greenish, the three uppermost having a tinge of ochre-yellowish; submarginal series of blue spots very well developed, the largest (next anal angle) having a double white centre, and there being one or two additional minute spots superiorly; cilia white; tails slender, black,—the one on third median longer in comparison with that on first median nervule than in *Saturnus.* UNDER SIDE.—*Markings and colouring agreeing very nearly with those of Saturnus, but ground colour of basal area dark reddish-brown instead of ferruginous-red, darker than in Pelias, and of outer area more decidedly greenish in tint; the white-bordered fuscous spots and striæ of basal area so much darker centrally as to be almost uniform. Fore-wing:* spots of outer part of discal band of a paler yellow; hind-marginal spots very thin, white, alternating with thin black ones; a submarginal, dentated, interrupted, ill-defined, fuscous line. *Hind-wing:* ferruginous markings outwardly bounding discal band much darker.

I have no ♂ examples of this *Charaxes*, but, from Cramer's figures and from notes of specimens in other collections, that sex is evidently much less like the nearly allied forms than is the ♀, as far as the upper side is concerned, owing to *the contraction and general diminution of the ochreous-yellow discal band, which is edged with ferruginous, and in fore-wing has the inner portion of its upper half reduced to three or four small separate spots.* The ground-colour of the upper side is very dark, almost black, with only a narrow greyish suffusion at bases; the hind-marginal lunules of the hind-wing are blue.

The differences pointed out clearly serve to distinguish *C. Castor* from *C. Saturnus* and *C. Pelias* (both of which have the basal area suffused with ferruginous), and I should have added, its very much larger size, if it were not for the immense ♀ of *Saturnus* above mentioned as figured by Mr. A. G. Butler.

I was not aware that this very fine *Charaxes* was found south of the Tropic until 1878, when Mrs. Monteiro sent me two female specimens from Delagoa Bay. I noted in 1881 that a male example from the same locality in Mrs. Monteiro's collection had the tail on the third median nervule much shorter than it is in the female.

Localities of *Charaxes Castor.*

I. South Africa.
  H. Delagoa Bay.—Lourenço Marques (*Mrs. Monteiro*).

II. Other African Regions.
  A. South Tropical.
    a. Western Coast.—"Angola (*Pogge*)."—Dewitz. "Chinchoxo (*Falkenstein*)."—Dewitz.
    b. Eastern Coast.—Zambesi (*Rev. H. Rowley*).
  B. North Tropical.
    a. Western Coast.—Elmina (*E. Bourke*). Ashanti.—Coll. Brit. Mus. Sierra Leone.—Coll. Hewitson.

113. (11.) **Charaxes Achæmenes**, Felder.

♂ and ♀ *Charaxes Achæmenes*, Feld., Reise d. Novara, Lep., iii. p. 446, pl. lix. ff. 6, 7 [♂] (1867).

Exp. al., (♂) 3 in.

♂ *Fuscous, with a common transverse white band and whitish hind-marginal spots; bases suffused with olivaceous-grey. Fore-wing:* band formed much as in *C. Saturnus*, but more widely bifid in its upper portion, the traversing black marks being enlarged and confluent, so that the inner part of the band is much narrowed, and also separated from the broader lower part,—its third (lowest) spot being small and far before the others; a faint bluish tinge along outer edge of lower part of band; hind-marginal spots somewhat suffused, inter-nervular,—the lowest sharply divided into two; in discoidal cell a small whitish spot at the extremity. *Hind-wing:* band obscured and widely interrupted below first median nervule, but its termination shown by a whitish inner-marginal mark a little before anal angle; white spots submarginal, seven, lunulate, much mixed with bluish; beyond them, close to hind-margin, a lunulated bluish-white streak, running into both tails as a median stripe, and becoming bronzy-green close to anal angle; tails rather long, the shorter one (on third median nervule) straight, rather acute, the other slightly curved, blunter; a marked projection in the outline of the hind-margin between radial and second median nervules. UNDER SIDE.—*Pale grey, hoary on margins, elsewhere tinged with brownish; before middle marked with dark ferruginous striæ,* of which all those in fore-wing and a few of those in hind-wing are on both sides edged with fuscous. *Fore-wing:* upper part of white band wider, not so macular; in outer part of band a much broken, thin, black traversing streak, and along the external edge of band a series of black marks, inwardly edged with ochre-yellow lunules, of which the two lowest are large and conspicuous, the others small; a submarginal row of ochre-yellow lunules (the lowest becoming fuscous), not well marked; hind-marginal whitish spots small, and mostly rather indistinct; in discoidal cell a short oblique streak near base, a spot followed by a similar more bent streak about middle, and a closing streak curving outward; along inner edge of white band a much interrupted streak from costa to submedian nervure; below cell a short streak above first median nervule, and another (nearer base) below it. *Hind-wing:* band broad between costa and radial nervule, but below this suddenly attenuated into a broken macular thin streak, and ending on first median nervule; inwardly bounding band a dark ferruginous streak, strongly marked, and black edged as far as the band is broad, but thence quite thin, and prolonged in a zigzag deflection to inner margin; before band two broken transverse striæ crossing cell, and a thin curved line closing it; beyond middle two parallel, black, irregularly sinuate streaks from costa to inner margin, enclosing a dull yellowish stripe, the inner streak thicker than the outer, especially in its upper half; submarginal series of lunules as on upper side, but more clearly defined, and the blue in them confined to their outer portion (but in those below radial enlarged and marked with black); hind-margin rather narrowly bordered with white (which below radial nervule is clouded with greenish), traversed mesially by an ochre-yellow line, most apparent and regular in its upper portion. Head with four white spots, two in front and two behind, all superior.

I have not seen the ♀, but Felder describes it as being on the upper side much like *C. Pelias* (Cram.), having the common band and the spots on the hind-margin of fore-wing suffused with fulvous, the latter being much larger and the former broader than in the ♂; the bases ferruginous, and the submarginal spots and hind-marginal streak of the hind-wing much enlarged. The under side is described as being almost the same as in the ♂, but hoary at the bases, and with the submarginal spots much larger.[1]

The pale dull colouring of fuscous and white on the upper side, and of grey streaked thinly with ferruginous and black on the under side, together with the much-produced fore-wings, readily distinguish this small *Charaxes* from any known South-African congeners, as far as the ♂ sex is concerned. The under-side pattern, as Felder remarks, bears some resemblance to that of the West-African *C. Etheta*, Godt., but it is much duller and less varied, with much thinner markings.

C. Achæmenes appears to be decidedly rare south of the Tropic, its nearest principal *habitat* being the neighbourhood of the Zambesi, while the wideness of its range is shown by recorded stations so far asunder as Angola and Abyssinia. Felder, however, gives Natal as one of its localities, and there is a specimen from Delagoa Bay in the Hewitson Collection.

Localities of *Charaxes Achæmenes*.

I. South Africa.
  E. Natal.—" Port Natal."—Felder.
  H. Delagoa Bay.—Hewitson Coll.
  L. Bechuanaland.—Crocodile River, S. of Shoshong (*F. W. Barber*).

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[1] Mr. Butler (*Trans. Ent. Soc. Lond.*, 1869, p. 274, note) identifies *Achæmenes*, Feld., as the ♂ of the unpublished *Jocaste* in the Collection of the British Museum, not referring to that author's description of the ♀. Mr. Butler adopted the name of *Jocaste* in his arrangement of the genus *Charaxes* (*Proc. Zool. Soc. Lond.*, 1865, p. 628), and intimates that his "sectional description, taken in connection with the locality, sufficiently characterised the insect, so that Felder's name must sink into a synonym;" but the brief diagnosis to which he refers was framed to include four species, and no characters were given to distinguish *Jocaste* from the other three butterflies. The locality, moreover, was "Senegal," whereas Felder's specimens are noted as from Natal and the Zambesi.

II. Other African Regions.
  A. South Tropical.
    a. West Coast.—" Angola (*Pogge*)."—Dewitz.
    b. East Coast.—" Zambesi."—Felder.
    *b*1. Interior.—Zambesi, near mouth of Umsengaizi (*F. C. Selous*). Lake Nyassa.—Hewitson Coll.
  B. North Tropical.
    b. East Coast.—" Abyssinia: Atbara."—Butler.

114. (12.) **Charaxes Ethalion**, Boisduval.

♀ *Charaxes Ethalion*, Boisd., App. Voy. de Deleg., p. 593, n. 83 (1847).
♀ *Nymphalis Erithalion*, Westw., Gen. D. Lep., pl. 48, f. 1 (1850–52).
♂ ♀ *Nymphalis Ethalion*, Trim., Rhop. Afr. Aust., i. p. 170, n. 98 (1862); and *N. Ephyra*, ii. p. 340 (1866).

Exp. al., (♂) 2 in. 3–7 lin.; (♀) 3 in.—3 in. 4 lin.

♂ *Black, with a few blue dots. Fore-wing:* dusted with a few blue scales; beyond middle, close to costa, a shining-blue dot: sometimes two faint blue dots at posterior angle. *Hind-wing:* near anal angle, parallel to hind-margin, a row of inter-nervular shining-blue dots; on hind-margin, above third median nervule, one or two *dull-red* lunules; from third median to anal angle, some greenish-ochreous lunules; a rather slender tail at extremity of both first and third median nervules,—the former the longer of the two. UNDER SIDE.—*Dull brownish-olivaceous,* with blue-black, occasionally white-edged, transverse striæ; an irregular streak from costa of fore-wing near apex, to near anal angle of hind-wing, running near, and almost parallel to, hind-margins. *Fore-wing:* two dusky-blackish spots near anal angle. *Hind-wing:* red and olivaceous lunules much more distinct than on *upper side;* the transverse streak crossing both wings is *in this wing* immediately succeeded by a row of dull-red lunular markings.

♀ *Brownish-black, glossed with violet-blue: transversely striped and spotted with white. Fore-wing:* on costa, a little beyond middle, commences a transverse row of white spots, interrupted on second discoidal nervule, and from third median nervule widening into a gradually-broader band of contiguous white spots, violet-margined on each side, to inner margin a little beyond middle; on costa, near apex, commences a second row of smaller white spots, tinged with ochreous or bluish, extending to below first median nervule, where the two lowest spots usually join the broad central band. *Hind-wing:* white, violet-margined band of *fore-wing* continued more broadly across middle of this wing to just before anal angle; a row of seven more or less distinct white lunules parallel to hind-margin; on hind-marginal edge the olivaceous and red lunules are larger and distincter than in ♂, those of the latter colour extending nearly to apex; unlike what is found in ♂, the tail on third median is rather longer and broader than that on first median nervule. UNDER SIDE.—Similar to that of ♂, *but paler* *and more glistening, with transverse white band in fore-wing. Fore-wing:* white band less distinct than on *upper side;* blackish spots near anal angle larger than in ♂. *Hind-wing:* a very indistinct, irregular olivaceous-whitish median band, outwardly edged with a blackish streak; the dull-reddish, lunular markings, immediately succeeding band, larger and more continuous than in ♂; hind-marginal lunules as in ♂, but more conspicuous, and immediately preceded by a lunulated whitish streak.

In a ♀ sent from D'Urban, Natal, by the late Mr. M. J. M'Ken, all the pale markings on the upper side of the fore-wings are suffused with dull-ochreous-yellow. In both sexes the extent and brightness of the glistening areas on the under side are variable, but the gloss is most silvery and developed in the costal-apical area of the fore-wing.

This species is distinct from *C. Ephyra*, Godt., with which I formerly identified it, but the two forms are closely allied. The ♂ *Ethalion* is considerably smaller than the ♂ *Ephyra*, and wants the latter's bronzy-greenish hind-margins, and two spots of the same colour about middle of costa of fore-wing; while on the under side it is duller and more ochreous in tint, and has the dull-reddish discal lunular markings much more distinct in the hind-wing. The ♀ *Ethalion* is very different from the ♀ *Ephyra* on the upper side; to judge from a Cape Coast Castle specimen of the latter in the British Museum, in which the two macular series of the fore-wing are almost united by connecting suffused whitish-dusky rays between the spots. On both surfaces of the wings the ♀ *Ethalion* bears considerable resemblance to the much larger *C. Cithæron*, Feld., ♀.

I met with this interesting *Charaxes* sparingly at Port Natal in January and February 1867, but succeeded in capturing female examples only. One of the latter was seated quite on the bare ground, and had evidently only just recently emerged from the chrysalis. I was attracted to the spot by seeing her flutter downward from a neighbouring tree. Colonel Bowker found both sexes on the wing in the same locality in August 1878. I believe that I noticed a ♂ in the edge of a wood at Knysna, in the Cape Colony, as long ago as 1858; and Mr. Streatfeild, C.M.G., informed me that he took the species in the George District in 1877, and in Kaffraria Proper in 1879.

Localities of *Charaxes Ethalion*.

I. South Africa.
  B. Cape Colony.—" George District."—F. Streatfeild. Oudtshoorn (*Adams*).
  D. Kaffraria Proper.—" 25 miles W. of Bashee River."—F. Streatfeild.
  E. Natal.
    a. Coast Districts. — D'Urban. "Lower Umkomazi." — J. H. Bowker.
  H. Delagoa Bay.—Coll. British Museum.

115. (13.) **Charaxes Phæus,** Hewitson.

Charaxes Phæus, Hewits., Ent. Month. Mag., xiv. p. 82 (1877).

Exp. al., (♂) 2 in. 10 lin.; (♀) 3 in. 3½ lin.

♂ *Fuscous, with a broad basal blue patch in each wing. Fore-wing:* blue fills discoidal cell, and extends obliquely to inner margin (where it is tinged with whitish) considerably beyond middle; a slightly elbowed submarginal row of six whitish spots (the three lower ones small and tinged with blue) from subcostal nervure a little before apex to second median nervule. *Hind-wing:* blue covers entire disc from base, leaving only a broad costal, apical, and hind-marginal fuscous border, and an inner-marginal greyish one; hind-marginal spots and lunules of the same colours and arrangement as in *C. Ethalion*, Boisd., but brighter and more conspicuous. UNDER SIDE.—Ground-colour considerably paler and more reddish; all the fuscous markings as in *Ethalion,* but thinner and fainter.

♀ Like *Ethalion* ♀; but with white transverse bar of *fore-wing* commencing conspicuously (somewhat as in *C. Cithæron,* Feld., ♀) on subcostal nervure at end of and just beyond discoidal cell, and well curved outward, forming a wide band, edged with violaceous in its lower portion; while in *hind-wing* the blue band is brighter than in *Ethalion.* UNDER SIDE.—Paler and more glossy than in ♂, quite silvery in apical area of both wings; markings similar, but white bar of fore-wing conspicuous, and a narrow irregular whitish median band across hind-wing.

This near ally of *C. Ethalion* has the apex of the fore-wing, in both sexes, more produced than in that species. The ♂ has considerable resemblance on the upper side to the much larger *C. Bohemani,* Feld.; but on the under side it is altogether different, that of *Bohemani* being like that of *C. Cithæron,* Feld.

The only specimens I have seen are a ♂ and two ♀s in the Hewitson Collection, which I believe were received from the late Mr. J. J. Monteiro.

Locality of *Charaxes Phæus.*

I. South Africa.
 H. Delagoa Bay.—Coll. Hewitson.

116. (14.) **Charaxes Cithæron,** Felder.

Charaxes Cithæron, Feld., Wien. Ent. Monats., iii. p. 398, t. 8, ff. 2, 3 (1859).

♂ ♀ *Nymphalis Xiphares,* Var. A, Trim., Rhop. Afr. Aust., i. p. 169 (1862).

Exp. al., (♂) 3 in. 6–8 lin.; (♀) 3 in. 10 lin.—4 in. 1 lin.

♂ *Black, glossed from bases with violaceous-blue, and marked with pale violaceous-blue bands and spots; the band in hind-wing suffused with* *white in its lower part. Fore-wing:* two transverse series of spots much as in *Xiphares,* but more apart as far as submedian nervure, where their junction forms a considerably wider marking; hind-marginal spots smaller, indistinct, obscure-whitish, the two lowest slightly bluish-tinged. *Hind-wing:* central band generally broader, but superiorly, as a rule, much reduced, and presenting above second subcostal nervule only one small separate portion; between second median nervule and submedian nervure the band becomes white; submarginal blue spots considerably larger and not so lunulate; hind-marginal lunules yellowish-white or pale-yellow; both the tails considerably longer and narrower. UNDER SIDE.—*Pale glossy olivaceous-ochreous, with very thin blue-black white-edged striæ (faintly marked in hind-wing); the olivaceous-whitish band obsolete, or barely indicated by a slightly paler tint of the ground-colour;* submarginal markings all as in *Xiphares,* but much fainter, especially the violaceous lunules in hind-wing.

♀ *Black, glossed with violaceous; median band of fore-wing pure-white, rather broad; that of hind-wing bluish-white shot with violaceous. Fore-wing:* inner row of spots enlarged so as to form a very conspicuous broad median band, commencing widely on costal edge, and extending to inner-marginal edge (near which it is widened and suffused with violaceous-bluish); outer row of spots obsolete except the upper two (rarely three) which are white; hind-marginal spots wanting. *Hind-wing:* median band considerably narrower inferiorly than in ♂, but more developed superiorly, being prolonged to costal nervure; submarginal spots and hind-marginal lunules as in ♂. UNDER SIDE.—Quite as in ♂, except that white band of upper side of fore-wing is conspicuously reproduced, though not extending quite to costal edge or below submedian nervure. Tails of hind-wing longer than in ♂, and narrower and slightly longer than in *Xiphares* ♀.

LARVA.—Deeper or lighter green, closely granulated with yellow, on back; light bluish-green or light bluish-grey on under surface; a chrome-yellow lateral-inferior stripe from second segment to anal extremity, which is bifid into two acute processes of the same yellow as the stripes. On sixth and eighth segments the yellow stripes are connected by a backward-curved, almost semicircular, transverse, yellow stripe; on back, just preceding the hinder portion of each transverse stripe, a dark-purple spot, composed of two small spots connected by indistinct purple lineolæ. On each side of eleventh segment, a small yellow spot, just above longitudinal stripe. Head rather large, green, surmounted by four serrated green horns (of which the two middle ones are longer than the others and divergent); face and outer edge of horns bordered with yellow; between the two middle horns a pair of small, acute, black-pointed tubercles. Feeds on the Flat-crown Acacia (*Zygia fastigiata*) in March and April.

PUPA.—Light-green, slightly maculated with white. A silvery-white line running along curved edges of wing-covers to summit of head, interrupted on the line of the antennæ. Anal segment produced, and bearing three pairs of small pointed tubercles.

The above description of the larva and pupa are made from notes and drawings of Natalian specimens communicated to me by Captain H. C. Harford and Mr. W. D. Gooch. The former gentleman wrote that he found several of the larvæ almost full-grown in the month of April, and that shortly before becoming pupæ they changed to a very light-green. The butterflies were disclosed after thirteen days' pupation.

This close ally of *C. Xiphares* (Cram.) is readily recognised by the characters given above, which appear to be quite constant. It seems also to be quite a local form, as I have seen no examples except from the coast of Natal, and have found no record of its occurrence elsewhere.

At D'Urban, Port Natal, *Cithœron* is of very frequent occurrence. From the middle of February to the beginning of April 1867 I observed many specimens of both sexes, frequenting chiefly the "sucking-places" on the stems and branches of *Zygia fastigiata* (the Flat-crown Acacia), on which tree, as above noted, the larva lives, and of *Acacia Lebbeck.* Another favourite resort of this butterfly was an exudation on the stem of *Oncoba spinosa* in the Botanic Garden. In habits and flight it entirely resembles its close congener. I observed a specimen on the wing on 23d June 1865; and Colonel Bowker has taken examples in the month of August; but they are only numerous in the summer months. When within reach, specimens engaged in feeding are easily captured.

The paired sexes were taken by Colonel Bowker, and sent to me in August 1881.

Localities of *Charaxes Cithœron.*

I. South Africa.
  E. Natal.
    a. Coast Districts.—D'Urban. "Lower Umkomazi."—J. H. Bowker.

117. (15.) **Charaxes Xiphares,** (Cramer).

♀ *Papilio Xiphares,* Cram., Pap. Exot., iv. t. ccclxxvii. ff. A, B (1782).
♂ *Papilio Thyestes,* Stoll, Suppl. Cram. Pap. Exot., t. xxxii. ff. 2, 2B (1791).
♂ *Nymphalis Thurius,* Godt., Enc. Meth., ix. p. 354, n. 15 (1819).
♀ *Nymphalis Xiphares,* Godt., *op. cit.,* p. 357, n. 25.
♂ ♀ " " Trim., Rhop. Afr. Aust., i. p. 167, n. 97 (1862).

Exp. al., (♂) 3 in. 7–10 lin.; (♀) 3 in. 10 lin.—4 in. 5 lin.

♂ *Black, glossed with violaceous-blue, and with violaceous-blue bands and spots. Fore-wing:* strongly glossed with blue from base; a median, transverse row of blue spots commencing immediately beyond extremity of discoidal cell, and extending to inner margin beyond middle, where it is joined by the last two or three spots of another, straighter row of smaller blue spots, commencing on costa, not very far from apex, with two conspicuous white spots; along hind-marginal edge are observable some faint, small, pale-ochreous spots, one between each two nervules, *except* between first median nervule and submedian nervure, where there are two such spots. *Hind-wing:* a broad, median, violaceous-blue band, widest about first median nervule, not reaching submdia nervure, narrowing to costa (where it is tinged with white), and interrupted on first subcostal nervule,—its lower outer edge not far before anal angle; a row of seven or eight sublunulate, blue spots near and parallel to hind-margin; beyond it, bordering margin, a row of partly contiguous, thin, bluish lunules, becoming thinner and almost obsolete towards costa; two short black tails, rather slender, at extremities of first and third median nervules respectively, the latter the longer of the two. UNDER SIDE.—*Pale, glistening, olivaceous-ochreous, with thin, blue-black, white-edged, transverse striæ. Fore-wing:* in discoidal cell three transverse striæ, and a fourth parallel stria, less distinct, just beyond extremity of cell; two similar striæ *below* cell, short, transverse, one above, the other below, first median nervule, the latter a little before the former; the position of the inner row of blue spots on *upper side* is indicated by an olivaceous-whitish externally ill-defined band, interrupted on third median nervule, and edged internally by a blue-back, white-bordered streak; in outer row of spots, the two first are *white* as on *upper side,* the remainder ochreous-yellow or whitish tinged with that hue, the two last large and lunular, surrounded with blackish, which, on their outer edge, forms a large conspicuous spot, violet-edged externally; hind-margin faintly stained with dull yellow. *Hind-wing:* near base two irregular, transverse, blue-black, white-edged striæ, commencing near costa, and extending to median nervure; a similarly coloured stria inwardly bounds a rather narrow, irregular, olivaceous-whitish stripe from costa beyond middle to inner margin a little before anal angle; this irregular stripe being bounded *externally* by some ill-defined, dull-yellowish, on both sides fuscous-bordered lunulate markings; bordering hind-margin a row of lunular, violet, *inwardly* white-edged spots, becoming very indistinct towards costa, and immediately preceding a row of indistinct, contiguous, dull-yellow lunules; *tails* brownish.

♀ *Black, with a deep purple reflection; spots on fore-wing large and white, band on hind-wing pale-yellow. Fore-wing:* spots of inner row pure white, connected so as to form an obliquely transverse stripe interrupted on third median, and extending to first median nervule; the three spots that continue the row to inner margin small and creamy-yellow, and seeming to belong more to the *outer* row of spots, though the *first* of the three is half white; in outer row the first two are pure white and rather large, the third white tinged with yellow, and the remaining spots wholly creamy-yellow; only the two lowest of the hind-marginal spots distinct, ochre-yellow. *Hind-wing:* median band broader in proportion than in ♂, except close to costa, soft creamy-yellow, in some specimens nearly touching anal angle; row of lunular spots of a purer blue than in ♂; row of contiguous lunules on margin *creamy-yellow,* conspicuous; *tails* similar to those of ♂, but proportionately longer. UNDER SIDE.—Similar to ♂, but *greyer and more* *glistening, with white transverse stripes. Fore-wing:* white band pure and conspicuous, continued narrowly to submedian nervure; outer row of spots conspicuous, particularly the lower two; hind-margin stained with dull-yellow near anal angle. *Hind-wing:* median stripe white, though not so brilliant as that of *fore-wing; beyond* band, and near inner-margin *before* it, a silver-grey tint; violet spots more lustrous than in ♂; dull-yellow lunular streak beyond them more apparent, and green-tinted at anal angle.

This grand *Charaxes* inhabits the woods of the Cape Colony and of Kaffraria Proper as far eastward as the Bashee River. In Natal it is replaced by the closely-allied *C. Cithæron*, Feld., which does not as yet appear to have been taken elsewhere. The actual district in Kaffraria where *Xiphares* gives place to *Cithæron* is not known.

At Knysna and Plettenberg Bay I met with *C. Xiphares* not uncommonly from the middle of December until the middle of May. Both sexes haunt by preference the outskirts of woods, seeming to delight in short flights of great velocity over open spaces, ending in a return to the tree stem or projecting twig they have quitted. The moist exudations on the trunks and branches always attract this butterfly, and I have frequently seen three or four specimens together busily engaged in drinking at one of these supplies of moisture. I have more than once disturbed a ♀ at rest on quite a low bush, but the ♂, though occasionally descending to within a few feet of the ground, never appears to settle except at a considerable height. Mrs. Barber has often observed the ♀ at highlands near Grahamstown—and I noticed examples there and at Mitford Park in 1870—but singularly enough has never seen the ♂ on the wing. Colonel Bowker, who forwarded several fine examples of both sexes from Kaffraria Proper, noted the species as "rare" on the Bashee River. Mr. W. C. Scully, who has lately (1885) observed the species in woods near Seymour (Eland's Post), found that a large number of these butterflies were attracted by the sap exuding from a climbing composite shrub, the stem of which he had wounded for the purpose.

Localities of *Charaxes Xiphares*.

I. South Africa.
  B. Cape Colony.
    a. Western Districts.—Knysna. Plettenberg Bay.
    b. Eastern Districts.—Grahamstown. Eland's Post, Stockenstrom (*J. H. Bowker*).
  D. Kaffraria Proper. Bashee and Tsomo Rivers (*J. H. Bowker*).

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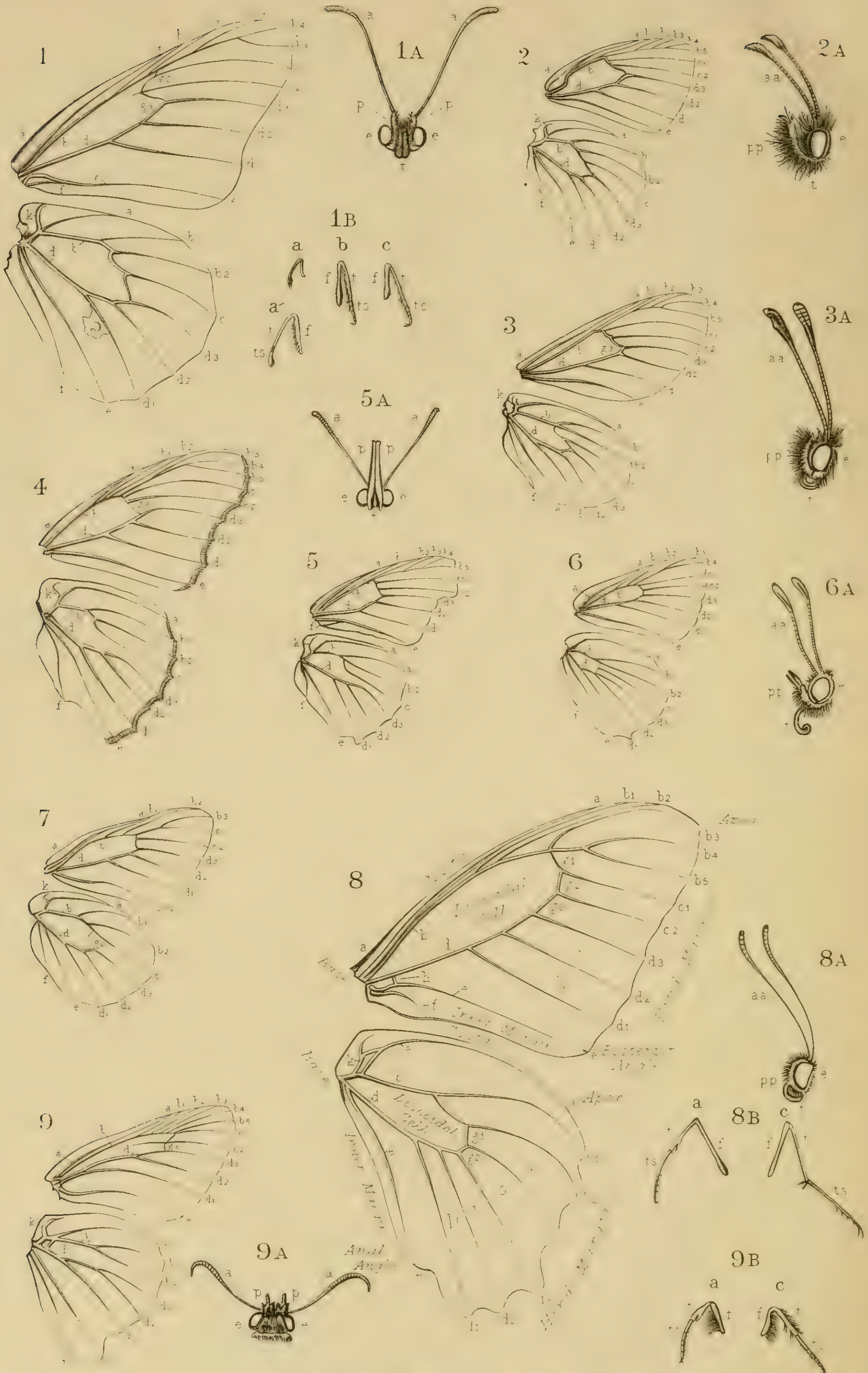
PLATE A.


1
1A
1B
a
b
c
a′
2
2A
3
3A
4
5
5A
6
6A
7
8
8A
8B
a
c
9
9A
9B
a
c
Base
Apex
Inner Margin
Posterior Angle
Discoidal cell
Inner Margin
Anal Angle
Hind Margin

WING NEURATION
AND OTHER STRUCTURAL FEATURES OF BUTTERFLIES.

R.T. *ad nat. delt*

EXPLANATION OF PLATE A.

WING NEURATION AND OTHER STRUCTURAL FEATURES OF BUTTERFLIES.

1. In this Plate the neuration of the fore-wing and hind-wing of butterflies of each Family and Sub-Family found in Southern Africa is represented, as are also the head and legs of some of them.

The species here illustrated have been purposely selected as the commonest and most easily procurable among the more characteristic representatives of the several groups, with the exception of *Libythea Laius* (fig. 5), which is the only South African member of its Family, and *Rhopalocampta Keithloa* (fig. 9), which from its large size afforded more convenience of illustration than the commoner small species of Hesperidæ.

The figures of wing neuration are in every case of the natural size. Those of the head are all somewhat magnified, except fig. 8A (*Papilio Demoleus*) and fig. 9A (*Rhopalocampta Keithloa*). The figures of the legs are all of the natural size except fig. 1B, a' (*Danais Chrysippus*), which is considerably enlarged.

The species representing the several Families and Sub-Families are the following, viz. :—

Family NYMPHALIDÆ—		
Sub-Family *Danainæ* . .	Figs. 1, 1A, 1B.	*Danais Chrysippus.* ♂
,, *Satyrinæ* . .	,, 2, 2A.	*Pseudonympha Sabacus.* ♂
,, *Acræinæ* . .	,, 3, 3A.	*Acræa Horta.* ♂
,, *Nymphalinæ* .	Fig. 4.	*Pyrameis Cardui.* ♂
Family ERYCINIDÆ—		
Sub-Family *Libythæinæ* . .	Figs. 5, 5A.	*Libythea Laius.* ♀
Family LYCÆNIDÆ	,, 6, 6A.	*Lycæna Asteris.* ♂
,, PAPILIONIDÆ—		
Sub-Family *Pierinæ* . .	Fig. 7.	*Pieris Hellica.* ♂
,, *Papilioninæ* . .	Figs. 8, 8A, 8B.	*Papilio Demoleus.* ♂
Family HESPERIDÆ . . .	,, 9, 9A.	*Rhopalocampta Keithloa.* ♀

The sign ♂ denotes the male, the sign ♀ the female.

2. In the figures of WING NEURATION, the letter and numbers attached to a particular nervure and its nervules (or branches) are uniform throughout, and apply to both fore and hind wings. In fig. 8 (*Papilio*) advantage has been taken of its large size to add the names of the various marginal parts and chief areas of the wings, such as *base, costa, hind-margin, discoidal cell*, &c., which apply to all butterflies alike. The names of the nervures and nervules, and the letters and numbers indicating them, are as follows, viz. :—

aa. *Costal nervure.* Simple, without nervules.[1]

b. *Subcostal nervure:* b1, b2, b3, b4, b5, *subcostal nervules.* There are usually five subcostal nervules in the *fore-wing*, but sometimes (see fig. 6) four only, or more rarely (see fig. 7) three nervules. In the *hind-wing* there are invariably only two subcostal nervules.

c1, c2. *Discoidal or radial nervules.* These nervules are held to be persistent branches of a discoidal nervure traversing the discoidal cell, still found in many moths (*Heterocera*) but wanting in all butterflies, except for a trace or rudiment in rare instances at the outer extremity of the discoidal cell (see figs. 1 and 9). There are two of these nervules in the *fore-wing*, but only one in the *hind-wing*. The latter is, however, badly developed or wanting altogether in the Family *Hesperidæ* (see fig. 9).

d. *Median nervure:* d1, d2, d3, *median nervules.* There is no variation in the number of these nervules.

e. *Submedian nervure.* Simple, without nervules.

f. *Internal nervure.* Simple, without nervules. This short nervure is usually wanting in the *fore-wing*. When present it usually terminates (see *Danais*, fig. 1; and *Libythea*, fig. 5) by junction with the submedian nervure. In *Papilio* (fig. 8) it is best developed, and terminates independently on the inner-margin. In the *hind-wing* it is usually much more prominent, and always independent, terminating at some point on the inner margin; but in *Papilio* it is altogether wanting.

g1, g2, g3. *Disco-cellular nervules.* These short transverse or oblique nervules connect the discoidal or radial nervules with each other, and also with the subcostal and median nervures (or one of their nervules) respectively above and below them. In the *fore-wing* the first (upper) nervule is generally very short, and sometimes (as in *Pieris*, fig. 7) absent entirely, the first (upper) discoidal or radial nervule being directly united with the subcostal nervure; while the third (lower) nervule is sometimes almost obsolete (as in *Pyrameis*, fig. 4), so that the discoidal cell appears to be open. In the *hind-wing* there are never more than two of these nervules, as only one discoidal nervule exists; and of them the second (lower) one is often obsolete or absent entirely (as in *Pyrameis*, fig. 4; *Libythea*, fig. 5; and *Rhopalocampta*, fig. 9).

---

[1] The base of this nervure, in common with that of the median and submedian nervures in some genera, is in many *Satyrinæ* and some *Nymphalinæ* swollen or inflated (see fig. 2, aa) in the *fore-wing* only.

h. *Interno-median nervule.* In *fore-wing* only. This minute transverse nervule is shown in fig. 8, uniting the median and submedian nervures near their origin. It is only found in the *Papilioninæ* and *Morphitæ.*

k. *Precostal nervure.* In *hind-wing* only. This short curved nervure, close to the base, is almost always simple, but in *Papilio* (fig. 8) and several allied genera, and in the Sub-family *Brassolinæ*, is forked, its lower branch being then united to the costal nervure so as to form a small prediscoidal cell.[1] The precostal nervure is wanting in *Lycæna* (see fig. 6), and apparently throughout the Family *Lycænidæ*, as well as in several genera of *Pierinæ.*

In fig. 4 (*Pyrameis*) is shown, along the hind-margin of both fore and hind wings, the fringe (*cilia*) of hairs or hair-like scales more or less developed throughout the *Lepidoptera.*

3. In the figures of the HEAD, figs. 1A and 5A are viewed from below, fig. 9A from above, and the remainder from the side. The following letters are used throughout to denote the several organs, viz. :—

aa. *Antennæ.* These many-jointed organs vary much in length and thickness, and the thickening or club at their tip is also very variable in the different groups as regards size, shape, and gradual or abrupt formation from the main antenna. In the *Hesperidæ* (see fig. 9A) the antennæ are widely separated at their origin, springing from each side of the wide head, and the point of the club is prolonged into a slender acute bristle, either bent at an angle or hooked.

pp. *Labial palpi.* These organs, springing from the *labium* or under lip, are three-jointed, but the extent and form of the third (terminal) joint only is readily perceptible, owing to the second (middle, and usually much the largest) and first (basal) joints being coated with scales and hairs. The extraordinary length of the palpi in *Libythea* (see fig. 5A) is due, however, to the unwonted development of the third joint; while in *Papilio* (see fig. 8A) these organs are so short as to rise only half as high as the head, not projecting forward at all.

ee. *Compound Eyes.* These great organs occupy a large space on each side of the head. They are always prominent and globose, and present but little variation in size or form.

t. *Trunk* or *haustellum.* This consists of the greatly modified *maxillæ* (second pair of jaws in biting insects), forming together a tube for sucking liquid food. When not in use it is spirally rolled up between the labial palpi. It is much longer in the *Hesperidæ* than in other butterflies.

4. In the figures of the LEGS (1B, 8B, and 9B) the various parts are distinguished by the following letters, viz. :—

a. Leg of first (front) pair.
b. Leg of second (middle) pair.
c. Leg of third (hind) pair.
f. *Femur* or thigh.
t. *Tibia* or shin.
ts. *Tarsus* or foot.

In fig. 1B all three legs of *Danais* are shown (a, b, c). The front leg is not a quarter the size of the middle or hind leg, and its tarsus is reduced to a single joint, with the minutest rudiments of two other joints (see fig. a′, magnified), instead of having the five joints and pair of terminal claws possessed by the other (normal) legs. The spurs at the end of the tibia are unusually small in both middle and hind legs.

In fig. 8B the front and hind legs of *Papilio* are given (a, c). The front leg (a) is quite as fully developed as the others, the tarsus possessing the five usual joints and the terminal claws. The spurs at the end of the tibia are well developed in the middle and hind legs, and the tibia bears on its inner (inferior) edge a large acutely-pointed process.

In fig. 9B (*Rhopalocampta*) the front and hind legs are shown (a, c). As in the *Papilionidæ*, the front leg is fully developed, and also bears a process (similar to that in *Papilio*) on the tibia. On the tibia of the hind-leg (c) there is a second pair of strong spurs at a little distance above the ordinary terminal ones. The femur of all the legs and the tibia of both middle and hind legs are densely clothed with hair.

NOTE.—The student will find it serviceable to consult this Plate, and the explanatory details here given, in connection with the remarks on the structure and classification of butterflies above offered (pp. 15–22) under the heading of "Rhopalocera;" and also with the particulars as to distinguishing characters given under each Family, Sub-family, and Genus in the body of the work.

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[1] The smaller and less complete prediscoidal cell found in several *Hesperidæ* (see *Rhopalocampta*, f. 9) is differently formed, between the costal and subcostal nervures, at the very base of the discoidal cell itself, by the downward flexure and sub-angulation of the subcostal nervure.

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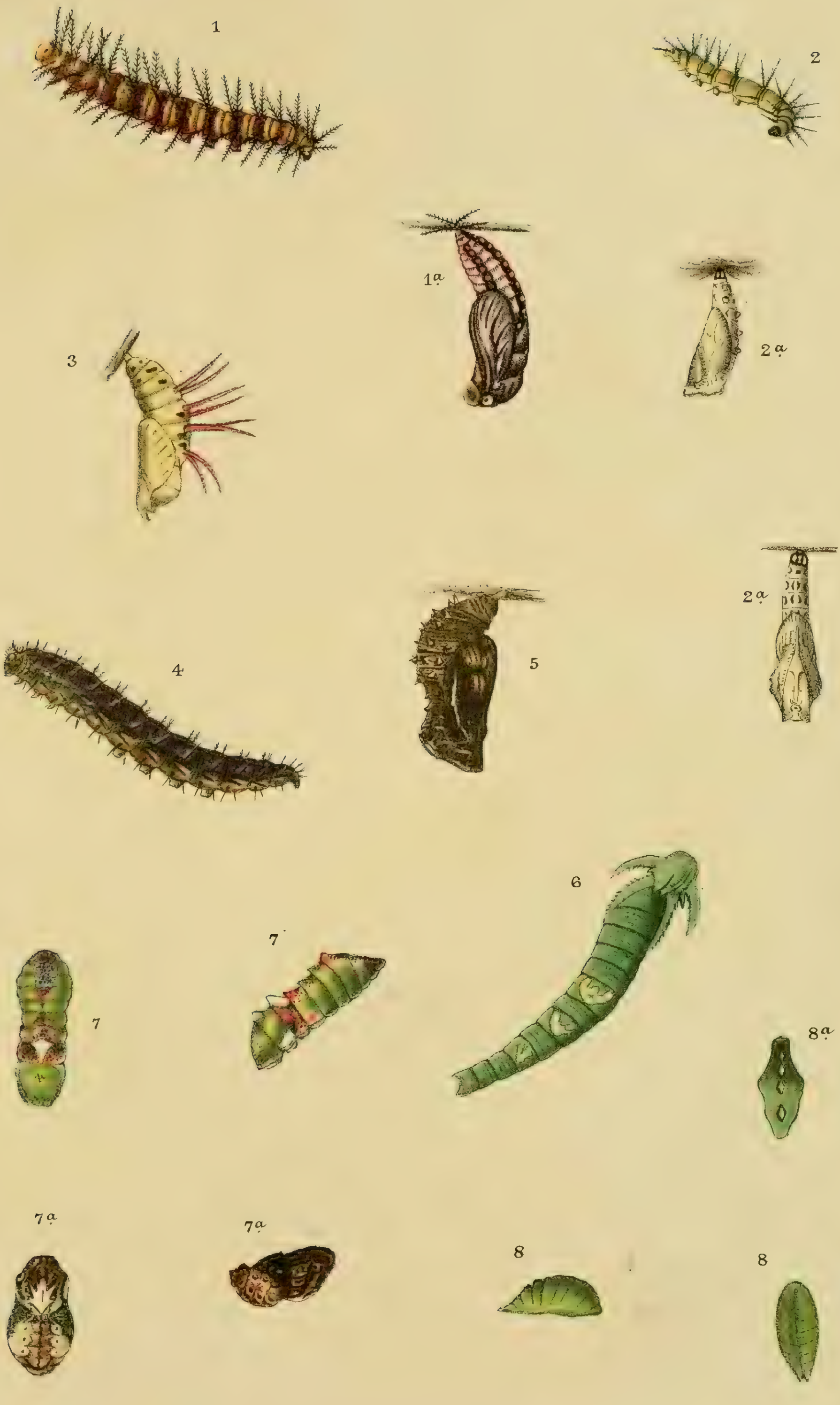
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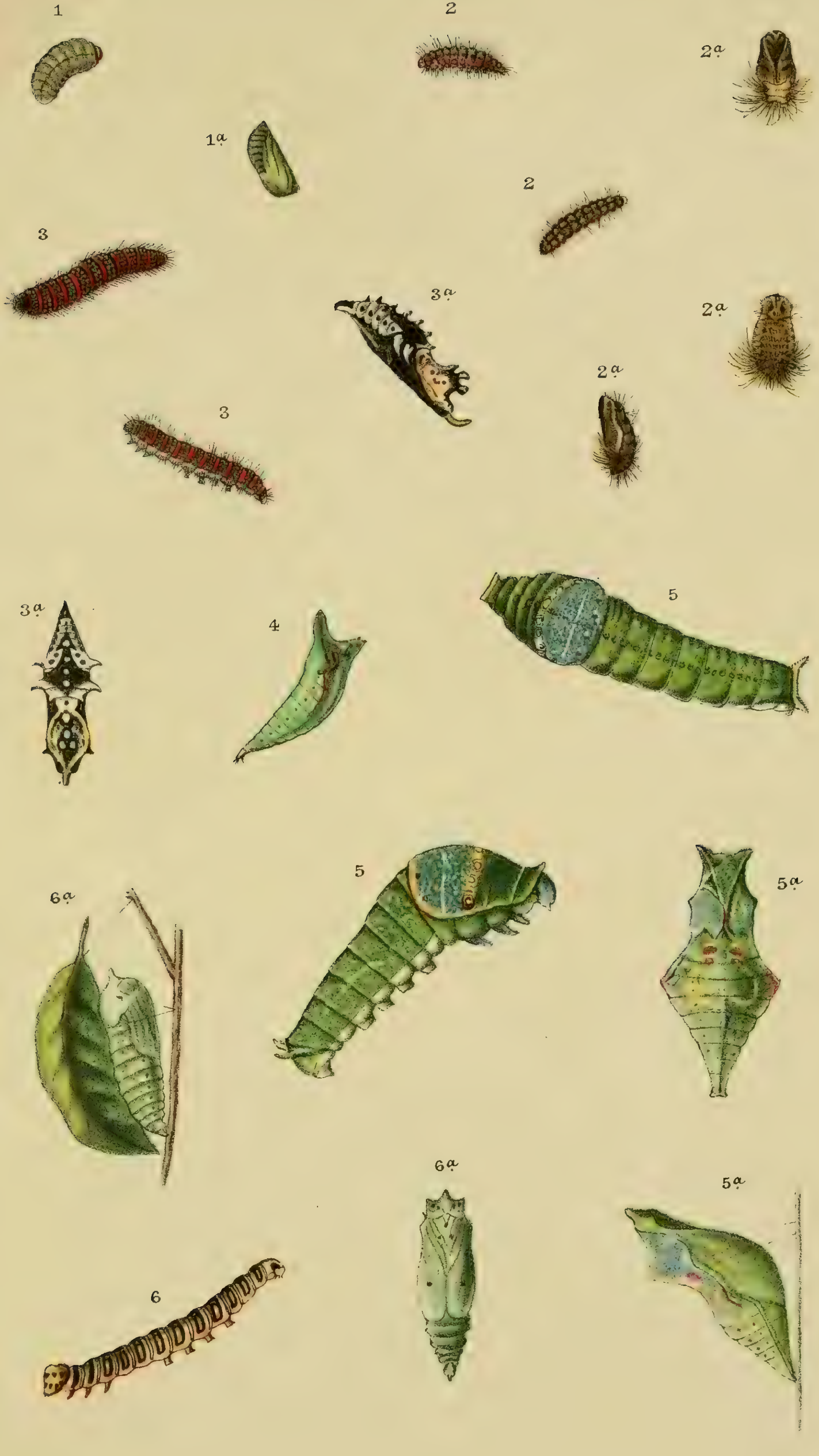
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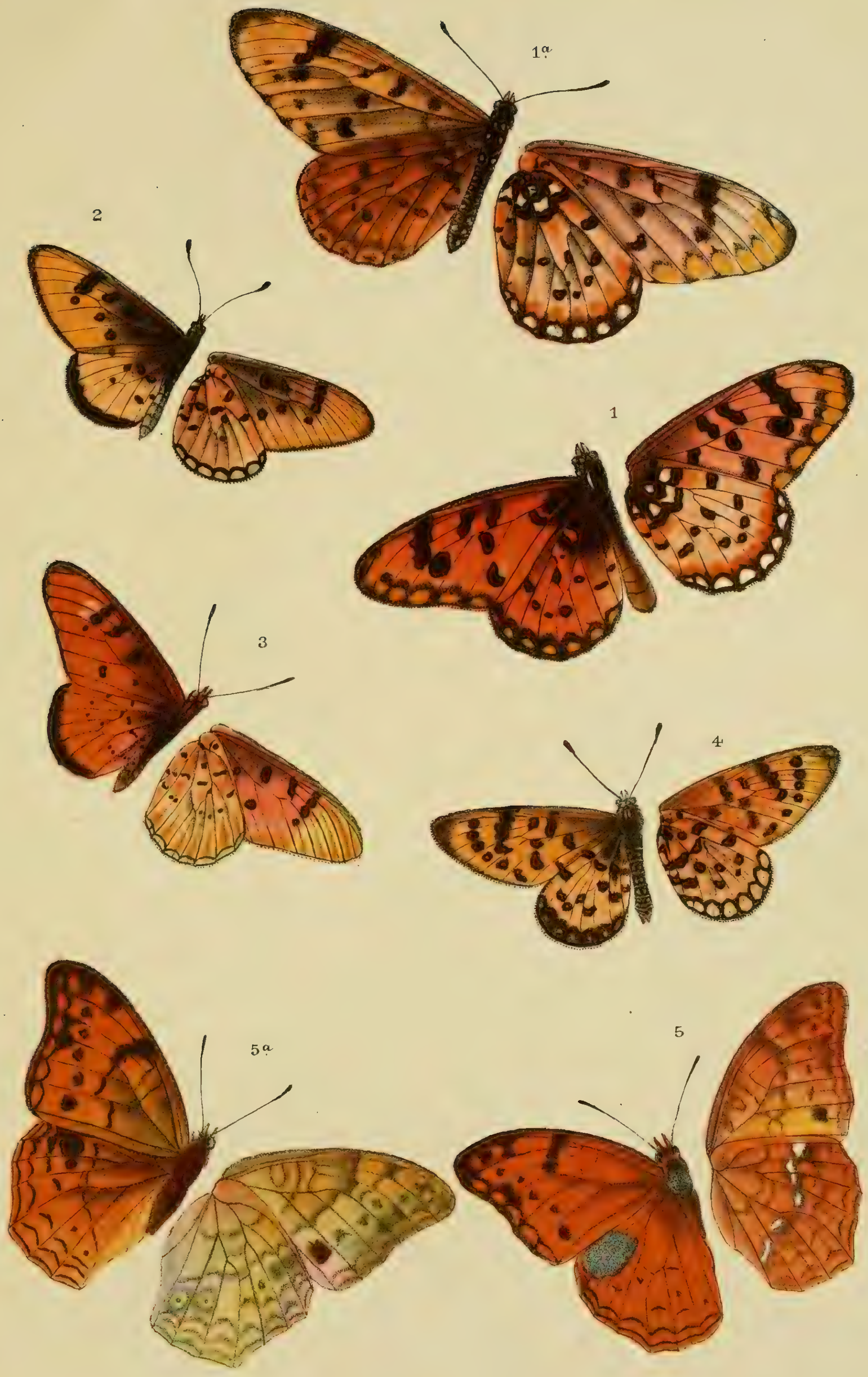

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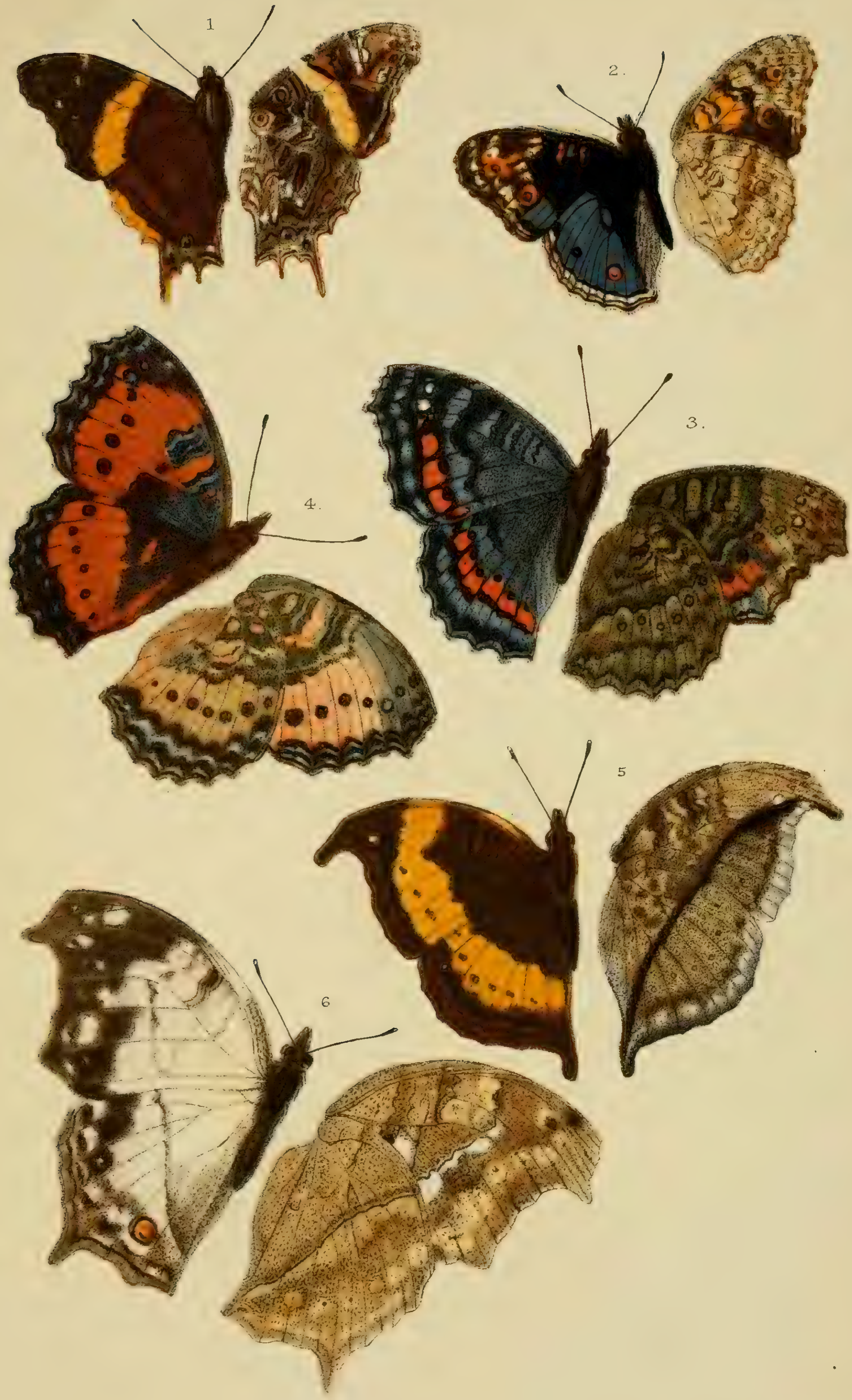

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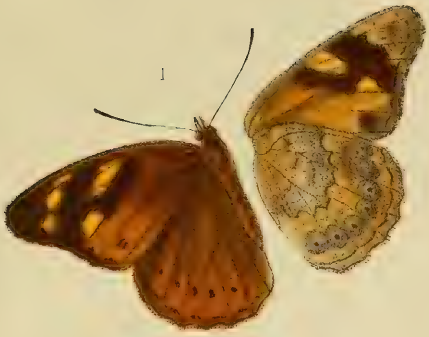

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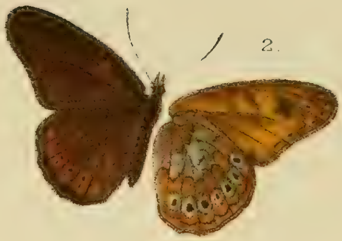

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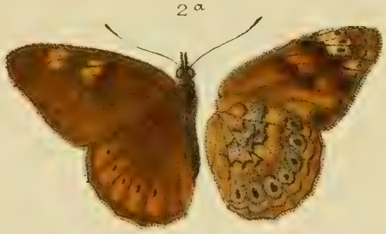

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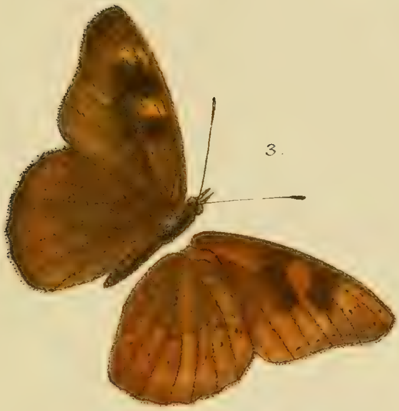

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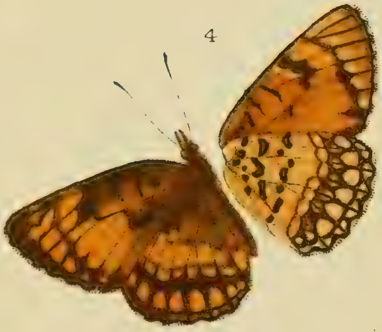

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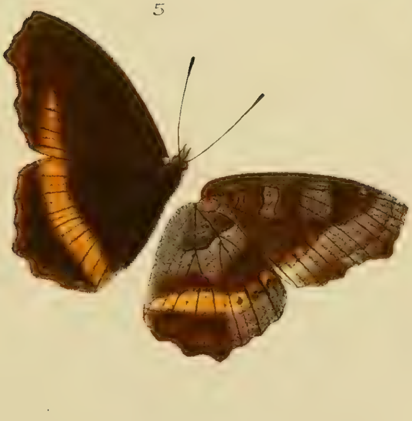

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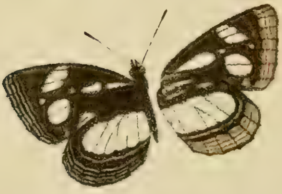

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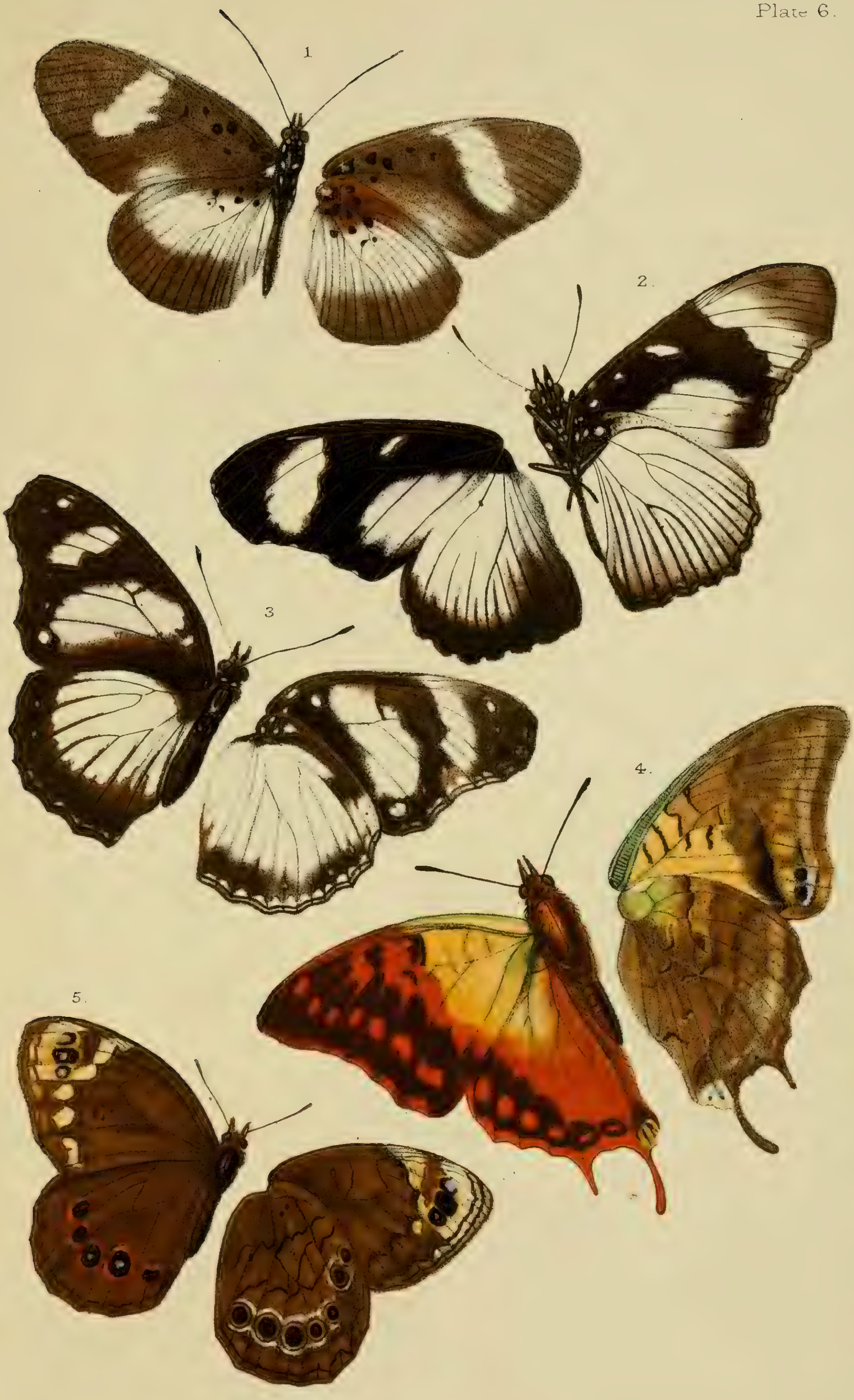

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